

TOBACCO *and*
Human Efficiency

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Tobacco and Human Efficiency

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Published by the Church of Jesus Christ
of Latter-day Saints

THE DESERET NEWS

Salt Lake City, Utah

1918

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THIS WORK IS HOPE-
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Foreword

Several years ago the writer conducted a party, consisting of nearly forty college men, in a geological examination of a Nevada mining district. During the afternoon of the second day of reconnaissance work it became necessary in the mapping of some general geological features to ascend the principal mountain of the district. After a brief conference at the base of the peak the men started off. The group soon thinned out into a long knotted line, such that when those at the head had gained the summit those at the rear were scarcely more than half way up the slope. The writer reached the top with the first small squad, and while awaiting for others to arrive he talked leisurely with those about him concerning various more or less important subjects. Some one in the group ventured the query as to why certain men were always in the rear, and another asserted that in this case they were all smokers.

Although the matter was discussed but briefly and then dropped, it started the writer upon a long line of observation. At first he placed but little confidence in the opinion expressed by one of the men that even a moderate use of tobacco incapacitates a man for strenuous mountain climbing, yet the subject seemed so vital that he determined to keep it in mind. During the following week the writer made note of the fact that almost without exception the same men were late in

reaching camp night after night, and strangely enough they were nearly all smokers. It seemed probable, however, that this might be accounted for on the assumption that they had leisurely strolled into camp while enjoying their pipes.

Some time during that week the work outlined for one of the days was completed slightly later than mid-afternoon. It was suggested by some one that the party take a "hike" over the hills to a spring probably five miles distant. The entire party agreed and was soon off. Before half a mile had been covered the competition of youth had brought every individual into a swinging run. The course was not marked by path or road but extended over rolling hills here and there interrupted by narrow steep canyons and deep ravines. In about one hour those who had kept the lead reached the spring and then waited in the scanty shade of nearby cedars for others to arrive. After waiting for probably half an hour, and when scarcely two thirds of the party had reached the spring, the return trip was begun. The stragglers were picked up at various points along the homeward course.

That night after supper the matter of the "hike" came up for discussion, and those who did not reach the spring came in for no little criticism at the hands of their companions. The reasons given, however, seemed ample: One had separated from the group and lost his way; another had sprained his ankle; another had broken a shoe lace; another had stepped on a cactus plant and stopped to remove the spines; and another had remained behind to assist a companion. The

fact, however, that practically every man who had failed to reach the spring was a smoker, made a deep impression upon several of those present.

Experience with various groups of college men year after year gradually brought the writer face to face with the fact that smokers are far less active in field work than are non-smokers. They almost invariably fall behind in long marches and quick steep climbs. Whether, however, this is due to inability or disinclination is quite another question.

On a subsequent occasion the writer conducted another party of college men over one of the desert mountain ranges west of Great Salt Lake. Upon getting off at the nearest railroad station it was learned that the expected conveyances had not arrived and that the party would have to walk some seven miles to camp. No time was lost in getting started, as the sun was then but a short distance above the horizon and the path was but poorly marked and unfamiliar to every member of the party.

The group started off on a brisk walk which almost immediately changed into a swinging run. The writer fell into one of the rear groups so that he might study at first hand the attitude of smokers toward long strenuous activity. Note was made of the fact that immediately after the running began every pipe disappeared—a thing which of itself has a remarkable meaning. For the first mile none of the men showed marked signs of lagging, but from then on the smokers gradually fell farther and farther into the rear. For the purpose of learning whether they were faltering because

of inability or indisposition the writer tried in many ways to encourage them to greater exertion. The response at first was good, but of short duration. The writer ran for more than a mile side by side with a strong robust fellow and encouraged him at practically every step. Finally he sank to the ground and explained that it was absolutely impossible for him to go further. Other smokers were overtaken, but each one in turn gave up the race and walked slowly toward camp.

That night the first group of men to reach the cabin consisted wholly of non-smokers, then came a single smoker, then more non-smokers, then smokers and non-smokers and finally smokers alone. The last men to come in were fully an hour behind the leaders. The writer's experience with the smokers on this occasion impressed him very strongly with the belief that they remained behind primarily because they could not help it. He had seen them again and again resolutely spring forward and quickly lapse apparently through sheer fatigue.

Another opportunity for the testing of this particular point presented itself the same season. During the course of a trolley ride to the field it was observed that nearly one-half of the men were indulging in the use of tobacco. Theretofore no mention had been made of the fact that the writer had been comparing the ability of the two groups, but on this occasion attention was called to the matter. The men were informed that in the opinion of the writer the smokers would not be able to endure with the non-smokers over the veritable wash-board of mountains marking the path of the

return trip. At first the smokers did not seem to take the matter seriously, but after some discussion among themselves they resolutely announced their acceptance of what was in reality a challenge of their physical manhood.

Throughout the day remarks were frequently made of the coming contest, for which every man appeared eager. About three hours before sunset the homeward trip of some ten miles across the mountains was begun. For two or three miles the men remained side by side. On one occasion when a short stop for "wind" was made the smokers tauntingly remarked that during the next "heat" they were going to sprint ahead and leave the non-smokers in their "dust". But when the next rest came several of the smokers had fallen behind and did not catch up before the party was off again. Then came the real test of endurance; the country changed from rolling hills to a series of long, steep, jagged mountains, alternating with sharp canyons. The full seriousness of the test seemed to be borne by every man. Conversation ceased, all available energy apparently being conserved for the physical demands of the moment.

The result of the day's trip revealed nothing unusual. That night as the first squad, consisting of eight men, climbed through the campus fence the writer asked as to how many used tobacco. Seven were complete abstainers and the remaining one said that he probably smoked an average of one cigar per week. The individuals who immediately followed were prac-

tically all non-smokers, and as usual those in the far rear were smokers.

Of recent years the writer has had a wide variety of experience with various groups of college men engaged in geological field work, and in every instance, where intense physical activity has been brought into play, the smokers have shown their inferiority. Furthermore, the matter has become so well established in the mind of the writer, that no surprise whatever is occasioned when the smokers begin to lag, in fact it is expected that they will do so.

The reason for this inferior physical activity is without doubt at least two-fold. In the first place the narcotic effect of tobacco actually reduces desire for activity, and in the second place actually destroys ability. Experience has overwhelmingly convinced the writer that smokers have far less desire for physical activity than have non-smokers and that they are far less able to indulge in it.

Readers of the foregoing brief statement may recall some instance in which a smoker has shown greater endurance or strength than a non-smoker, and, in consequence, may feel that there is good reason for differing with the writer's conclusion as stated in the next preceding paragraph. It is important to bear in mind, however, that in such a matter as this, conclusions should never be drawn when but few individuals are engaged. In order to obtain reliable results large numbers must be involved. It is here pertinent to note that no case has ever been reported in which a large group of smokers has shown greater physical endurance than

a similar group of non-smokers, while the reverse of this everywhere holds.

Physical inferiority among tobacco users has now become so well known that they themselves commonly admit it, but they try to avoid the personal application of a general truth by asserting that many individuals are immune to its poisonous action. They argue that while certain individuals with weak constitutions may suffer from the use of tobacco, others more robustly built are not adversely affected by it, and, strangely enough, such defenders almost invariably consider that they themselves belong to the exempted class. As a matter of fact, it seems to be very difficult for a smoker to believe that he himself is seriously handicapped by the habit. Young smokers very commonly resent any imputation of their physical deficiency, and even after absolute demonstration is made are slow to accept the facts.

The point of vital importance in this immediate connection, however, is: "Are the deleterious effects of tobacco upon men limited to the physically weak and to others of special idiosyncrasy, or do the effects reach out to every individual no matter how robust he may be?" For the purpose of ascertaining facts bearing upon this matter the present writer recently collected data from a large number of athletic coaches relative to the physical condition of football men, both smokers and non-smokers. The results thus collected from American universities show that smoking is associated with an average reduction in lung capacity amounting to 9.2%. Inferiority is shown not only in the average

of all institutions reporting but also in those of every team. The full significance of these facts can properly be estimated only when it is borne in mind that the men here involved represent our extreme height of physical perfection. When tobacco robs our most robust men of practically ten per cent of their lung capacity there certainly can be no question of its ill effects upon all others.

Athletic coaches universally prohibit the use of tobacco to all men in training, and the men themselves not only readily accede to the regulations but they admit the wisdom of such. One of the least understandable things in this connection is that an athlete who is fully acquainted with the necessity of abstaining from tobacco while in training, should permit himself to return to it after the season is over. The fact certainly holds that if tobacco is bad for an athlete while in training it is equally bad for him while out of training.

The effects of tobacco do not strike alone at physical efficiency. It has now become a demonstrated fact that its use in institutions of learning is everywhere accompanied by low scholarship. The results are the same in the grades, in the high schools and in the colleges. Literally scores of investigations in various sections of the country have failed to report a single exception.

The scholastic standing of smokers, as revealed by examination of college and university records, averages close to ten per cent below that of non-smokers. At first thought it may appear that this inferiority is not sufficient to count for much in the matter of success

or failure. It cannot be stated too positively, however, that in these days of close competition, the great bulk of mankind are making or losing on margins much smaller than this. An individual who today can make a mouse-trap or an ocean-liner, a few per cent better than his closest competitor is assured of success.

One should probably not be too hasty in concluding that simply because low scholarship is associated with tobacco that the latter is solely responsible for the inferiority. It is now commonly argued by defenders of the habit that smokers are not mentally inferior because of smoking, but that *they smoke because of lower initial mentality*. Even though the admission is a most uncomplimentary one, yet many tobacco adherents are willing to make it rather than abandon the habit. Then again, they often argue that at college the social class is made up largely of smokers, that attention to society detracts from scholarship, and, therefore, that smokers fall below non-smokers primarily because of the greater demands upon their time outside of school.

Both arguments are interesting, and both probably contain some merit. It should be borne in mind, however, that investigations in which all of the subjects were eating the same kind of food, carrying the same amount of college work, getting the same amount of sleep, and taking the same amount of physical exercise have shown that smokers fall below non-smokers in scholastic standing. Furthermore, through the employment of simple devices, it has recently been demonstrated that even in case of those accustomed to the habit, the smoking of a single cigar is followed almost

immediately by a reduction of mental ability amounting to practically ten per cent.

Tobacco is now being condemned from a wide variety of sources. Manufactureres are coming to believe that men who use tobacco, especially in the form of cigarettes, are not as proficient as those who abstain. Bankers regard cigarettists as undesirable, largely because of their reduced moral and social sense. Educators everywhere report low scholarship as a close associate of the habit. Juvenile court officials are almost a unit in the belief that tobacco is a strongly contributive factor in juvenile delinquency. Merchants discriminate against cigarette smokers in the employment of boys and young men for responsible positions. Many physicians and hospital surgeons are disclaiming against the use of tobacco, especially in the form of cigarettes, largely because of the damaging effect it exerts on practically every vital organ of the body. And then the masses are condemning it because of the pronounced impairment of the social sense in a large majority of those who use it. There are, of course, a great many excellent men who have not as yet aligned themselves against the tobacco evil, yet during the past few years their number has very materially decreased.

It is of course apparent that many men who use tobacco have made remarkable success even under its handicap, yet it cannot be doubted that their work would have been much easier, happier and more effective without it. Such men seem to have been successful not because of it, but in spite of it.

In the following pages the writer has attempted to

outline fairly and without prejudice the findings of modern investigation touching the matter of tobacco and its influence on man's efficiency. In putting these truths into writing effort has constantly been made to avoid giving offense to the great army of splendid gentlemen who use tobacco and who are trying to respect the rights of others. Any apparent discourtesy on the part of the writer should be credited to his enthusiasm in a subject which he believes to be of vital importance to the human family, and not to any intentional desire to offend or to invade the rights of others.

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Tobacco and Human Efficiency.

I

COMPOSITION OF TOBACCO AND TOBACCO SMOKE

COMPOSITION OF TOBACCO.—It will be recalled that the culture of tobacco is possible throughout a wider variation of climate than that of almost any other commercial plant, and that the soil upon which it can be grown ranges from the heavy clays through various loams to light sands. It will also be borne in mind that profitable tobacco culture requires very careful and intelligent fertilization, and that finally, after the plant is properly matured, the process of curing regulates to a very marked extent the quality of the finished articles.

All these factors and others contribute to the complexity of tobacco composition, which not only differs in various grades, but also in various parts of the same leaf. Ash, of course, forms one of the principal constituents of all tobaccos. Fourteen samples, including both superior and common grades, analyzed by E. Quajat, showed the ash to range from 31.03 per cent in Bassano sample to 17.11 per cent in Virginian, and 16.78 per cent in Turkish. Quajat considers that the quality of tobacco varies inversely with the quantity of ash present, but other investigators recognize no such relation.

Tobacco contains a very large number of chemical salts, consisting principally of sulphates, nitrates, chlorides, phosphates, and maltates of potassium, calcium and ammonium. Other constituents of tobacco are albumen, resin, gum, sugar, tannin, extractive, citric acid, nicotianin, and nicotine.

The rate with which tobacco burns is influenced to a marked extent by its composition, especially the potassium and calcium content and the particular form in which these materials occur. The chemical substance known as maltate of potassium is thought to favor burning or smoking, and when this is imperfect it may be improved by artificially adding a soluble salt of potassium acetate, or other organic salt of this metal.

The aroma and flavor of tobacco are attributed to a peculiar substance closely related to nicotine called Nicotianin or Tobacco-camphor. The peculiar flavor of "Perique" tobacco is due to butyric acid developed during the process of curing.

While the quality of tobacco seems to be intimately connected with the nicotine content, yet it does not invariably follow that tobacco carrying a high percentage of this alkaloid is necessarily of good grade. Nicotine is thought to hold about the same relationship to tobacco that alcohol holds to spirituous liquors, and just as the latter would lose their attraction if alcohol were absent, so would tobacco become undesirable if nicotine were eliminated. A large number of processes have been devised for the extraction of nicotine from tobacco, but none of them has become popular. Tobacco without nicotine is not tobacco.

NICOTINE is present in tobacco in quantities ranging

from one to more than ten per cent; it averages very close to three per cent. It is thought to be derived from protein matter, the nitrogen of which is absorbed from the soil. Therefore, fertilizers carrying large quantities of nitrogen should be used sparingly when low-nicotine tobaccos are desired. It has also been observed that a hot moist climate, in addition to a rich soil, favors an increase in the production of nicotine. The percentage of this alkaloid present is also modified by the kind of curing process employed.

THE CHEMISTRY OF TOBACCO SMOKE.—The chemistry, or composition, of tobacco smoke is by no means identical with that of the unburned material. In addition to the presence of practically all of the original constituents, tobacco smoke contains several substances generated during combustion. Defenders of the use of tobacco have repeatedly asserted that the poisonous substances originally present are completely destroyed during the process of smoking. This statement, however, as we shall see later, has no justification in fact.

Any process of burning consists essentially of the uniting of carbon and oxygen, the carbon coming from the substance being burned and the oxygen from the air. Complete combustion requires these elements to unite in the proportion of one atom of the former to two atoms of the latter. In order that this may be accomplished an abundance of oxygen in the form of fresh air must be available, otherwise the combustion will be incomplete and smoke will result. Smoke consists of the volatile products thus formed charged with unburned particles of carbon or soot. The color of smoke, say that issuing from a factory stack, or for

that matter from a human stack, is indicative of the degree of combustion, complete burning giving rise to colorless products and incomplete burning to colored products.

The process of smoking as ordinarily practiced consists essentially of slow-burning or smoldering of tobacco, accompanied by inhalation and exhalation of the gaseous products. No form of tobacco smoking permits of other than partial combustion. As a matter of fact, ready and complete burning, as ordinarily accompanied by flame, would wholly destroy the object of smoking. Cigars, cigarettes and pipes are so designed that the tobacco used will burn slowly and produce a maximum amount of smoke.

The gas derived from complete burning of pure carbon consists exclusively of carbon and oxygen in the form of carbon dioxide otherwise known as carbonic acid gas. Incomplete burning gives rise to variable quantities of carbon monoxide, a gas consisting of carbon and oxygen in the ratio of one to one. Tobacco when subjected to partial burning, as in the case of smoking, necessarily gives rise to a very highly complicated group of gaseous products, accompanied, of course, by variable quantities of solid material.

Among the principal substances found by chemical analysis of tobacco smoke are the following: Nicotine, pyridic bases, formic aldehyde, ammonia, methylamin, sulphuretted hydrogen, prussic acid, butyric acid, carbon dioxide, carbon monoxide, water vapor, an etherized empyreumatic oil, and tarry or resinous substances.

The composition of tobacco smoke varies greatly and depends largely upon the nature of the tobacco, the

degree of consumption and the manner of smoking. Just as the composition of smoke from a chimney is influenced by the nature of the fuel and the various devices employed in its combustion, so is that of tobacco smoke coming from the cigar, pipe or cigarette. It can hardly be expected that the loose open nature of the cigarette will permit of the production of gases identical with those generated in the poorly ventilated pipe. Nor will the composition of the smoke arising from a partially consumed cigar or cigarette be the same as when completely burned. These factors with many others combine to make the composition of tobacco smoke far from simple.

Nicotine, generally regarded as the most active principle in tobacco, is partially destroyed during the process of combustion. The percentage thus destroyed depends largely upon the completeness and manner of smoking. Nicotine is very easily volatilized. In other words, it passes readily into a vaporized condition upon being heated. The volatile nature of nicotine causes it to travel toward the smoker's mouth a short distance ahead of the burning end of the cigar or cigarette, and, therefore, to accumulate in the unburned portion. It is important to note that a large part of the nicotine remains in the cigar or cigarette until the last half or two-fifths is being smoked, a condition which makes a smoker reluctant to part with the "stub." Cigarette smokers are particularly fond of the last "draw". Cigar stumps commonly become too strong for most smokers. Physicians who permit patients to use tobacco at all wisely prescribe that at least the last third of the cigar be thrown away. It should plainly be apparent, there-

fore, that the quantity of nicotine present in tobacco smoke depends to a rather large extent upon the degree of combustion.

Nicotine is much more readily destroyed by complete than by partial burning. Chemical analyses show that cigarette smoke contains the least amount of nicotine and pipe the most, a condition which is readily accounted for by the loose open nature of the cigarette and the consequent ease with which it burns. The pipe, on the other hand, acts as a kind of retort which permits the tobacco to burn only from the surface, while the hot gases thus formed readily carry the nicotine over into the smoke. In a word then, there is much more nicotine destroyed in the cigarette than in the pipe. The cigar occupies middle ground. The London *Lancet* recently printed the results of an elaborate series of smoke analyses, showing that about one-fifth of the nicotine present in tobacco passes over unchanged into the smoke of cigarettes and that from three to four fifths passes over into the smoke of pipes. This means that from twenty to sixty or eighty per cent of the nicotine originally present in tobacco is actually taken into the user's mouth and lungs. Not all of this is absorbed into the smoker's system, otherwise he would be fatally poisoned almost immediately.

Tobacco users not infrequently try to justify their practice by resorting to the somewhat popular opinion that nicotine is completely destroyed in smoking, and therefore that it does not enter the system as such. The following statement of so eminent authority as Professor Cushny of the University of London should suffice to repudiate this claim:

"It has been stated, and the statement has received an undeservedly wide circulation, that tobacco smoke contains no nicotine, but merely products of its decomposition; but as a matter of fact, tobacco smoke whether from cigar or pipe contains large quantities of the alkaloid (nicotine) along with pyridine and many of its compounds."

Practical impressions everywhere are that cigarette smoking is by far the most dangerous. This fact in connection with the foregoing data has led some to believe that nicotine is probably not the most active principle in certain forms of tobacco smoke. Bad as nicotine may be, it is now believed by some scientists that there is probably something worse. Aldehydes, derived from partial combustion of various carbohydrates, are known to be present in the smoke of most cigarettes. The poisonous effects of crude, immature whisky are accredited to the destructive action of aldehydes. *Furfural*, the principal aldehyde found in cigarette smoke, is now regarded as fifty times as poisonous as ordinary alcohol. The London *Lancet* states that "the furfural contained in the smoke of one Virginian cigarette may amount, according to our experiments, to as much as is present in a couple of ounces of whisky". Furfural is present in largest quantities in American cigarettes and nearly absent in certain Turkish and Egyptian types. The latter, however, may fully make up for this deficiency by the presence of larger percentages of nicotine. The *carbon monoxide* content of tobacco smoke is derived through incomplete combustion of the organic material present.

Cigarette wrappers are advertised by most manufac-

turers as being absolutely free from deleterious drugs, and otherwise as pure as paper can be made—"the acme of the paper art." There appears to have been a time in the manufacture of cigarette paper when it was treated with various drugs, primarily for the purpose of causing what is popularly termed a "comeback". At present the practice seems to have been quite generally abandoned. It is of great importance, however, to keep in mind that highly poisonous substances may be derived from the combustion of materials otherwise quite harmless. The following statement of Thomas A. Edison concerning one of the noxious components of cigarette smoke is at this point particularly noteworthy: "The injurious agent in cigarette smoke comes principally from the burning wrapper. The substance thereby formed is called 'Acrolein'. It has a violent action upon the nerve centers, producing degeneration of the cells of the brain, which is quite rapid among boys. Unlike most narcotics this degeneration is permanent and uncontrollable."

A list comprising the more poisonous substances now known to be present in tobacco smoke should include the following: *Nicotine, furfural, acrolein, prussic acid, hydrogen sulphide, carbon monoxide, ammonia, empyreumatic oils*, and probably others. The number will undoubtedly become larger as our knowledge of the chemistry and pharmacology of tobacco smoke increases.

II

POISONOUS FACTORS OF TOBACCO

Almost immediately after the introduction of tobacco into Europe its baneful effects became manifest. King James of England in his famous "Counterblast to Tobacco", issued early in the seventeenth century, described its injurious effects with almost as much plainness as can be done at the present time. The precise nature, however, of its injurious components does not seem to have been known until a much later date (1828), when nicotine was discovered by Passelt and Reimann. For many years thereafter this drug was regarded as chiefly if not wholly responsible for the bad effects of tobacco. Within the last few years, however, science has shown that tobacco smoke contains practically half a score of drugs any one of which is highly destructive of human health.

NICOTINE.—The recent discovery of other toxic factors has in no way relieved nicotine of its odium. As a matter of fact, in some respects it is now looked upon with more apprehension than ever before. Only a short time ago the administration of nicotine, in the form of tobacco preparations, was permissible under the regulations of both European and American pharmacopias, a practice which at the present time is regarded as exceedingly dangerous. It is now definitely known that from twenty to eighty per cent of the nico-

tine present in tobacco passes over into the smoke undestroyed. Just how much of this is absorbed into the smoker's system cannot definitely be stated, of course not all of it, otherwise thousands of smokers would be killed daily. That which is not absorbed by the smoker passes out into the atmosphere to be assimilated or to be breathed by other individuals close at hand.

At one time both an ointment and a wine of tobacco were officially recognized by the National Standard Dispensatory, but as the poisonous nature of tobacco gradually became known, they were both abandoned, so that at the present time tobacco is rarely employed in medicine, except in domestic practice, where it is still regarded by some as possessing peculiar curative properties. The National Standard Dispensatory looks upon the practice of giving tobacco as a emetic as entirely unsafe.

Nicotine seems to be limited in its natural occurrence almost exclusively to the tobacco plant. It does not occur in the young plant, and in mature ones it seems to be restricted to the epidermal tissue of the leaves, more particularly at the base of the hairs, to the external tissue of the roots, and to the stamens and pistils.

Pure nicotine is a highly poisonous, colorless, oily fluid, which boils near 482° F. but distills at lower temperatures. When heated it has a pungent, acrid, tobacco-like odor, a burning taste, and a strongly alkaline reaction. Upon being exposed to the air it acquires a brown color, and after some time is converted into a resinous mass.

Nicotine has but little poisonous action upon the lower invertebrates, but among the higher animals,

where the nervous system is better developed, its action becomes more and more pronounced. It seems to strike chiefly at the central nervous system. When poisonous, but not necessarily fatal, doses are administered to man or other mammal the following symptoms ordinarily appear :

Circulation.—After moderate quantities are administered, the heart becomes slow and may remain practically still for a few seconds. It then gradually recovers its former rhythm, and commonly becomes quicker than usual. As the effects wear off the pulse slowly returns to normal or below. The injection of nicotine into a vein also causes a very sudden rise of blood pressure, which, after a few seconds ordinarily falls below normal, a condition due to the weakening action of the heart.

Respiration.—"The respiration is at first rapid and shallow with some deficiency in the expiratory movements, but after a time, while maintaining the acceleration, it becomes deeper. It is liable to be interrupted at this stage by the convulsions, but if they do not prove fatal, it gradually becomes slower while remaining asleep." (Cushny.)

Secretions.—The secretion of saliva is at first increased but is later depressed, while large doses diminish it at once. "The reflex secretion of saliva normally produced by irritation of the mouth or by chewing is prevented by nicotine." (Cushny.)

Nausea and vomiting together with evacuation of the bowels commonly follow as the contractive effect of nicotine upon the entire intestinal tract.

The *Bladder* is also thrown into a state of contrac-

tion, giving rise to frequent passing of urine. In pregnant animals the uterus is also strongly contracted frequently resulting in abortion.

The *Pupil of the Eye* in various animals is affected differently, in some contracted and in others dilated. Acute doses commonly produce in man first contraction followed by dilation.

The *Central nervous system* is attacked by nicotine in such a manner as to bring on convulsions, which seem to be due to an exaggerated irritability of not only the spinal cord, but of the medulla oblongata or hind brain.

The *excretion* of nicotine is performed almost wholly by the kidneys. It may be detected in the urine very soon after being taken into the system.

It can hardly be said that the poisonous effects of smoking always bear a direct relationship to the amount of nicotine present in the original tobacco, for, as has already been shown, variable percentages of it are destroyed during combustion, and then again, other harmful substances are not present in constant quantities. Judging the entire tobacco habit from the standpoint of the nicotine content, chewing is the worst, followed in turn by the cigar and the cigarette. It is obvious that the chewing habit brings all of the nicotine present directly into contact with the mucous membranes of the mouth and throat. In the pipe, from twenty to forty per cent of the nicotine is destroyed, and, therefore, only about three fifths of the original content is inhaled by the smoker, while with the cigarette scarcely more than one fourth of the original nicotine enters the user's system.

From the foregoing it will probably be argued that the cigarette is the least harmful form in which tobacco is used. The fact must not be lost sight of, however, that nicotine is not the only harmful component of tobacco smoke, and, further, that the cigarette contains substances probably not present in other forms. Then again cigarettes encourage the practice of inhaling.

The part, therefore, which nicotine performs in tobacco poisoning seems to vary greatly with the form in which tobacco is used. In some forms nicotine is without doubt the principal toxic agent, while in others it likely occupies a subordinate position. In no form of tobacco usage do the evil effects of this drug entirely disappear. Even in the case of cigarettes, where possibly not more than one-fourth of the original nicotine actually enters the user's system, the quantity is easily large enough to cause disastrous results. The fact should not be overlooked that nicotine is a very intense poison, which may prove fatal to man even in exceedingly small quantities. The National Standard Dispensatory places the dose of nicotine at from one-sixtieth to one sixth of a grain.

CARBON MONOXIDE, or oxide of carbon, is a colorless gas formed during combustion when the supply of air is greatly restricted. In an ordinary hearth fire it may be seen changing over to carbon dioxide as indicated by the blueish color of the flame. Its poisonous properties are highly pronounced, a condition which depends principally upon the fact that this gas can combine to form a very stable compound with the haemoglobin of the blood, the coloring matter of the red corpuscles. Haemoglobin performs the highly important function

of carrying oxygen from the blood out into various parts of the body where it is utilized for the creation of muscular activity. When, however, haemoglobin unites with carbon monoxide it loses its ability to take up oxygen, and the same conditions follow as when the individual smothers. Very small quantities of this gas present in the air of an ordinary room are sufficient to produce giddiness and headache followed by unconsciousness.

The carbon monoxide content of tobacco smoke is derived through incomplete combustion. The presence of this poisonous substance may be shown by blowing a mouthful of smoke upon a dilute solution of fresh blood, which at once assumes a pinkish color, characteristic of the compound formed when carbon monoxide reacts with the haemoglobin of the blood. The *Scientific American* states that "one ounce of tobacco smoked in the form of cigarettes gives as much as from one pint to four pints of carbon monoxide gas, while the same amount of tobacco smoked in a pipe gives from two and one-half to five pints of the gas". Here again it may appear that the pipe is more pernicious than the cigarette, and again it should be remembered that with the cigarette only is inhaling generally indulged in, and also that the cigarette contains other poisonous drugs. The symptoms of carbon monoxide poisoning resemble in a very remarkable manner those of tobacco-smoke poisoning; in both cases the individual develops a tendency toward dizziness, pronounced shortness of breath and heart disturbance.

No less an authority than the *Scientific American* publishes the following emphatic statement relative to

the poisonous effects of carbon monoxide: "When we consider the large amount of carbon monoxide present in tobacco smoke, and compare with this fact that as little as .17 per cent of this gas present in the room is fatal to animals, though usually .4 per cent is required, and that anything above .15 per cent is regarded as distinctly dangerous, it is obviously within the bounds of probability that tobacco smoke can be harmful on account merely of this gaseous constituent."

While it should hardly be expected that smoking even in a closed room will bring the percentage of carbon monoxide up to the fatal point, yet it will be remembered that the smoker through the practice of inhaling is constantly introducing into his respiratory system a much more highly concentrated mixture. A considerable percentage of the gas thus inhaled is absorbed directly into the circulatory system where it unites with the haemoglobin of the blood, and, in proportion to the amount absorbed, destroys the function of this indispensable carrying agent. Even non-smokers are seriously affected by the air in a room impregnated with carbon monoxide from tobacco smoke. Anyone may recall the headache and drowsy, stupid feelings after being shut up in a "smoker" on a railway train, or in the badly ventilated air of a smoking concert-room.

The amount of carbon monoxide present in tobacco smoke is largely independent of the composition of the material before burning, the quantity present depending largely upon the degree of combustion, or rather lack of combustion. Carbon monoxide may arise almost as readily from the smoking of cedar bark, paper, or rye-straw as from tobacco, a fact which emphasizes the

point that any kind of smoking, no matter what material may be used, is dangerous to the human system. Thus in any form of smoking, the user carries in his mouth a little furnace, the smoldering ashes of which are constantly generating this obnoxious gas. The incessant action of these irritating fumes, even though present in smaller than fatal doses, greatly impairs the function of the blood in its life-giving distribution of oxygen to various parts of the body, resulting in a generally vitiated and poorly efficient system.

PRUSSIC OR HYDROCYANIC ACID, on account of its volatile and poisonous nature, is seldom seen outside chemical laboratories. When breathed, even in very small quantities, it may prove fatal almost immediately. Even though the size of the fatal dose is somewhat larger than that of some of the alkaloids, notably nicotine, yet it acts more quickly, and in consequence has come to be known as the most dangerous of poisons.

Professor K. B. Lehman of Wurzburg has recently shown that the amount of this substance present in tobacco smoke depends to a large extent upon the rate of smoking. A slow current of air passing through a cigar produces a much smaller amount of prussic acid than does a rapid current. Professor Lehman has further shown that the presence of this drug in tobacco smoke ranges close to .025 per cent, and that the amount absorbed into the system after smoking several cigars reaches four or five milligrams.

It has been argued by some that inasmuch as the human system may ingest as much as eight milligrams of prussic acid without any noticeable response, that this poison may be dismissed from the category of toxic

factors in tobacco smoke. The unscientific nature of this argument has been pointed out elsewhere. It does not take into consideration nature's marvelous "factor of safety", and really argues that the human system is not injured unless it immediately manifests the injury in measureable terms. It is now definitely known that the kidneys, the heart, the respiratory system and in fact every organ of the body may be worked considerably beyond normal without immediately manifesting the results of overwork. The human body may be greatly abused and still do its work marvelously well, but even slight injuries imposed over long periods of time finally make pronounced inroads into the general health. The amount of prussic acid in ordinary tobacco smoke does not seem to be sufficient to bring on paroxysms of ill health, yet its action, extending over months and years, should not be overlooked in listing the factors of tobacco-smoke poisoning.

ACROLEIN OR ACRALDEHYDE is a colorless volatile liquid, somewhat lighter than water, formed during the partial combustion of substances containing fats or glycerine. It has an intensely irritating action upon the eyes and nose. In contact with the skin it produces bad sores. The vapor causes a very copious flow of tears, and when a few drops of the liquid are vaporized in a room the atmosphere becomes wholly insupportable to human life.

The great chemist Schorlemmer issues the following indictment against this poisonous drug: "The vapor attacks the mucous membrane of the nose and eyes in a frightful manner. Redtenbocker remarks: 'In a very highly diluted condition the smell is not altogether

unpleasant, being somewhat etherial, but a few drops of acrolein brought into a room soon bring the company to tears. It chiefly acts upon the eyes, the vapor producing a burning sensation and a copious flow of tears. The eyes remain red, without, however, other evil consequences, but on repeated exposure to the action of acrolein, inflammation sets in, and this may last for many days.' When exposed for some length of time to an atmosphere containing small quantities of the vapor of this body a peculiar feeling is experienced similar to that which is felt after indulgence in moderate quantities of alcohol."

Thomas A. Edison, the famous inventor, has recently taken a very decided stand against the use of cigarettes chiefly, it seems, because of the acrolein which is formed during their combustion.

FURFURAL OR FURFURALDEHYDE is a colorless, oily, volatile liquid of aromatic odor resembling both that of bitter almond and oil of cinnamon. It is produced during the partial combustion and distillation of bran, sugar and wood as well as most other carbohydrates. Recent analyses in the *Lancet* laboratories have revealed the presence in tobacco smoke of certain aldehydes, particularly the aldehyde furfural. The results show that the percentages of furfural in cigarette smoke run much higher than that in either the pipe or the cigar, as a matter of fact it seems to be practically absent from cigar smoke. Furthermore, certain forms of Egyptian and Turkish cigarettes produced much smaller quantities of this poison than American cigarettes. The *Lancet* reports that all cigarettes yielding the most pungent and irritating fumes "invariably

showed the largest proportion of furfural, and these were also, generally speaking, the cheapest in the series examined". It would seem, therefore, from the findings of this eminent authority, that cheap American cigarettes are particularly to be avoided.

Furfural is a very pungent substance and exerts a powerful irritating action upon all mucous membranes. Sir Lauder Brunton, the well-known European scientist, places the toxicity of furfural as fifty times as great as that of alcohol, and is further quoted as saying that small doses cause "symptoms of transient irritation, such as ataxia, tremors and twitching", while in adequate quantities this drug "gives rise to epileptiform convulsions, general muscular paralysis, ending in paralysis of the respiratory system". It is perhaps a significant fact that throat troubles, so commonly associated with cigarette smoking, are not nearly so pronounced in the case of cigar and pipe smokers.

The *Lancet* investigations seem to indicate that the most harmful forms of tobacco-smoking are intimately connected with large quantities of furfural, and not necessarily with excessive nicotine. It would be premature at this time, however, to assert that this poison is accountable for all or even the major evil effects of cigarette smoking. After comparing the probable toxicity of nicotine and furfural the *Lancet* conservatively states its attitude thus: "Furfural is an undesirable constituent of tobacco smoke, and there is a probability that the least harmful tobacco will turn out to be that which yields a minimum of, or no furfural at all, or any other aldehyde in the smoke of its partial combustion."

HYDROGEN SULPHIDE AND AMMONIA.—A list of the

more important toxic factors of tobacco smoke will in all probability at some future time include a considerable number not mentioned above. It would seem that at present ammonia and hydrogen sulphide quite properly deserve a place upon this list. While the effects of these two products are likely not so pronounced as others before mentioned, yet they certainly should be taken into account when considering the total effects of tobacco-smoke poisoning.

Hydrogen sulphide or sulphuretted hydrogen is a gas possessing strongly irritant properties. When inhaled in concentrated form it almost instantly proves fatal, and in smaller quantities it may almost immediately cause unconsciousness. Exposure to a very dilute atmosphere of hydrogen sulphide is followed by irritation of the eyes, nose and throat, sneezing, dryness and soreness of the throat, dullness, giddiness and loss of energy. Lehman believes that as little as one part of this gas mixed with one thousand parts of air is sufficient to poison a man fatally within a very short time. The poisonous effect of hydrogen sulphide is thought to be due to its local irritant action and also its action upon the central nervous system. The gas is poisonous to almost all forms of life; even the microbes that produce it through certain types of putrefaction are eventually killed by it unless it is freely carried away.

Ordinary commercial "ammonia" is a solution of ammonia gas in water constituting what is properly called ammonium hydroxide. Ammonia is easily volatile and separates readily from the water solution as a strongly irritant gas. Its painful action upon the mucous membranes of the nose and throat probably has

been experienced by all. Three parts of ammonia mixed with ten thousand parts of air are sufficient to cause sneezing and pain in the nose and eyes, while five parts in ten thousand of air form a dangerous mixture if breathed for some time. The injurious effects of this gas arise principally from its local irritant action and subsequent inflammation.

Naturally enough our interpretation of the toxic properties of tobacco smoke has necessarily undergone considerable modification as our knowledge of the chemistry and physiological action of the constituent gases has increased. Long before any of its toxic factors had been specifically identified, tobacco came to be regarded as a decided poison. Immediately after the presence of nicotine had been discovered and its poisonous properties determined, this drug was quite universally regarded as responsible for all of the pernicious effects of tobacco; in fact the terms "nicotine-poisoning" and "tobacco-poisoning" came to be used synonymously. Later analyses of tobacco smoke gradually revealed the presence of other dangerous products, including, carbon monoxide, prussic acid, ammonia, hydrogen sulphide and others. Still more recent investigations have identified acrolein and furfural. At the present time, therefore, the ill effects of tobacco-smoking are attributed to a large number of poisonous agents, rather than to one, as when nicotine was held chiefly responsible.

In the estimation of authorities upon this subject, nicotine undoubtedly still holds first place among the toxic factors of tobacco poisoning in general. Nicotine seems to be particularly active in the habit of chewing,

as here all of the drug is brought into direct contact with the mucous membranes of the mouth and throat, while in the use of cigarettes it is likely much less active on account of the comparatively small percentage present, although in estimating this matter one must keep in mind that inhaling is indulged in almost exclusively in the use of cigarettes. Carbon monoxide probably does its greatest harm in connection with the pipe, and least with the cigarette. Furfural and acrolein appear to be particularly active in connection with cigarette smoking. The cigarette is quite universally regarded as the most pernicious form in which tobacco is smoked, followed in turn by the cigar and pipe. The practice of inhaling is everywhere looked upon with marked disapproval.

Almost every year scientific investigation reveals new light on the toxicity of tobacco, and every fact thus far revealed clinches more tightly the indictment against it. Only a few years ago anti-tobacco advocates limited their arguments almost exclusively to the nicotine content, while at the present time science has brought to their aid nearly half a score of other dangerous constituents.

III

GENERAL PHYSIOLOGICAL EFFECTS OF TOBACCO

It will be remembered that during the burning process, a number of chemical substances not present in tobacco itself are developed, and, furthermore, that the particular manner in which it is burned governs to a large extent the character and quantity of these gaseous compounds. Tobacco, unburned, contains a long list of chemical ingredients, chief among which from our present point of view are nicotine and nicotianin. For many years nicotine was held chiefly responsible for the illeffects of tobacco no matter in what form it was used. This view will, of course, hold true at present for tobacco used in chewing. But of more recent date, chemists have discovered a number of substances in tobacco smoke that seem to be fully as grievous as nicotine, or even more so.

Drug action upon various individuals may not produce identically the same conditions. The body is so constituted that the sympathy of one organ for another often results in a marked distribution of the load. Then again, in different individuals the various organs may not possess equal resistance. In consequence of this, one smoker may first show impairment of the heart, another of the nervous system, and still another of the eyes. Some few tobacco-users may exhibit no serious symptoms, even after long continued use. And herein lies a serious danger.

Organs of the body are not precisely like parts of a machine that can be examined to determine whether or not they are withstanding the stress of the load to which they are being subjected; yet in some respects there is a marked similarity, for all organs of the body exhibit danger signals as soon as impairment begins. And like the dry bearing of a machine that becomes noisy through overheating, the heart, nervous system, lungs and digestive tract issue warnings when imposed upon. The average human being, however, might be likened to the inexperienced person driving his first car, who scarcely knows whether or not the engine is running well, and who is unable to localize the trouble when he knows that it is present. The owner of a new machine recently drove into a garage wondering why his engine was failing to respond, while right before his eyes the indicator on the instrument board showed that his lubricating oil had run dry.

Like the inexperienced driver, the average individual does not know, or will not admit, that harm is being done or that the body is out of repair until it slows down or refuses to go at all. This similarity applies to almost every smoker in existence. Each one, somehow, seems to think that he is an exception to the general rule, and refuses to believe that the habit is doing him harm until he suddenly comes to a realization of the fact that his health is probably already permanently impaired.

No argument is needed to convince even the most skeptical that the repair of human bodies, like machines, should be begun the instant that depreciation begins and not postponed until insurmountable difficulties

arise. As a matter of fact, in both cases, nothing should be tolerated that would bring on an impairment of parts. It is one of the unexplainable things in life, moreover, that otherwise intelligent beings willingly subject their bodies to a poisonous narcotic drug and then persist in maintaining that it is doing them no harm, until perhaps some serious trouble arises that compels them to admit their fallacies.

Another condition almost equally as strange is that most smokers resent any suggestion that tobacco is doing them harm. This is particularly the case among young smokers who have not yet seriously suffered from its effects. Such men almost never care to talk of the matter, in fact they commonly avoid it whenever possible. They sneer at any suggestion of harm, and are seldom willing to investigate the findings of science in relation to the habit. The percentage of young men who are approachable on this subject and who are anxious to know the truth about it is decidedly small. No one seems to know of a single individual who, in the early days of his smoking career, ever went to his physician or friends for advice in the matter.

Anti-tobacco literature when placed in the hands of young men who have recently acquired the habit is almost never read and when it is, it is not believed. When at public lectures where the matter is discussed, cigarettists almost never become interested and commonly show disrespect. In private conversations they change the subject as soon as possible. Young men purposely becoming interested in the discussion of this subject are virtually unknown. It would be well if each smoking youth could be called upon to explain to him-

self his lack of interest in this vital matter. There can be but little question that each explanation would contain a confession of a belief that tobacco is harmful and that the fear of having to abandon it had prevented his discussing the matter.

The following statements have been carefully selected from the world's highest authorities. Parents and others who are engaged in preventing the spread of the tobacco evil will do well to make note of the unanimity of statement concerning this monster enemy of the human race.

The *National Standard Dispensatory*, considered by all physicians as one of the highest court of appeals in the matter of drug action, has the following to say concerning the general physiological effect of tobacco:

"Tobacco is rarely employed today as a remedy except in domestic practice. It is a local irritant to mucous membranes, stimulating the secretions, increasing the flow of saliva when chewed, acting as a laxative when swallowed in small quantity, and as a purge in larger dose. Used in moderate amount, by being smoked, chewed, or snuffed by those who have acquired toleration to its influence, it produces a sense of mental and physical restfulness and well-being which has not been accounted for by studies of the physiological action of the crude drug or its alkaloid, nicotine. The effects of overdoses of tobacco, as usually manifested, consist in nausea and vomiting, quick, deep, and afterward labored respiration, great muscular relaxation, giddiness, mental confusion, restfulness, an enfeebled circulation, general depression, and occasional clonic convulsions, followed by complete loss of reflexes and fatal

issue. The convulsions are considered to be of spinal origin, and death is due chiefly to paralysis of respiration, the heart continuing to pulsate after the cessation of breathing. The continuous over-indulgence in the use of tobacco results in chronic inflammation of the upper respiratory passages, indigestion and loss of appetite. A condition known as "tobacco heart" characterized by cardiac irregularity and palpitation, frequently follows abuse of the drug. Headache, giddiness, tremors and other nervous symptoms are of common occurrence. Certain eye symptoms, notably dimness of vision for colors, and even complete blindness, may occur. Examination of the eye-grounds in these cases reveals paleness of the retina in the milder type, and in the severe ones the optic nerve is found degenerated. Tobacco has been given internally to correct habitual constipation, and used in enemata to overcome impaction of feces and intestinal obstruction. As an anti-spasmodic, tobacco and nicotine were recommended in the treatment of laryngismus stridulus, athma, hiccough, tetanus, and strychnine poisoning. Locally, an infusion and ointment have been applied with benefit in scabies, tinea, and other skin affections. Many cases of poisoning, some with fatal issue, have resulted from its external application, so that this use has been abandoned. Tobacco may be given as an emetic in the dose of five grains, but is unsafe. The dose of nicotine is stated to be from one sixtieth to one sixth grain."

The manner in which tobacco poisons attack various organs of the body is pointed out in the following statement of Dr. John D. Quackenbos, Emeritus Professor in Columbia University:

“The first effect of tobacco smoking is stimulating with a rise of blood-pressure. Sedative effects follow with a fall of blood-pressure, and if the smoking is continued the nerves are depressed. The depression is stimulative in the system of the smoker, and after varying intervals of days, weeks or months, it creates an instinctive demand for the antidote to tobacco poisoning, and that is alcohol. The intemperate use of tobacco thus explains seventy-five per cent of all drink habit cases. The alcohol thirst is engendered and inflamed by smoke. The real danger in smoking consists largely in the habit of inhalation, whereby the volatilized poisons are brought into immediate contact with many hundreds of square feet of vascular air-sac walls in the lungs, and are thus promptly and fully absorbed, to be diffused into the blood and carried on their fatal errand to the several organs of the body. Young subjects immediately learn to inhale. They are, moreover, markedly susceptible to the influence of these poisons, which include, beside the chief active constituent, nicotine-ammoniacal vapors that dry the throat and liquefy the blood, carbon monoxide or illuminating gas that induces a drowsy, dizzy condition and disturbed heart action, prussic acid in combination, sulphuretted hydrogen, and irritant aldehydes, all virulent nerve poisons, capable in their concentrated conjoint action of paralyzing the muscles of respiration and so causing death”

The deleterious effects of tobacco upon the nervous system is made clear in the following statement by Dr. C. J. Aldrick, Lecturer on Clinical Neurology and Ana-

tomy of the Nervous System, at the Cleveland College of Physicians and Surgeons:

"Tobacco is a respiratory poison; it directly affects the centers—brain centers—which preside over respiration. These centers are delicate nerve mechanisms regulating both the depth and frequency of the respiratory act. In health whenever the blood becomes overcharged with carbonic acid, this center becomes immediately irritated and increases both the depth and frequency of the normal respiration; as soon as the blood becomes free from carbonic acid the respiration is diminished in frequency and loses depth. The constant and harmonious operation of this delicate center produces the normal rhythmical respiration of the healthful man. Anything that interferes with its normal operation interferes with the proper nutrition of the organism and jeopardizes the height, growth, and development of its possessor.

"The effect of tobacco, even in moderate amounts, depresses and diminishes the fine sensibility of this important center and inhibits its reactionary powers to the stimulus of carbonic acid gas. When this condition obtains the organs must of necessity suffer from accumulation of carbonic acid gas and a deficiency of oxygen. The former is most inimical to perfect growth and development, and lack of the latter which is so essential for every form of animal life, can not fail to dwarf and disturb the development and functions of the growing nervous system. Tobacco is a poison to the motor nerves; it actually diminishes the power of the respiratory muscles; it diminishes the

force of the heart's action, besides it renders the latter irritable, easily excited, and unable to respond to sudden emergencies, thereby disturbing and interfering with the normal circulation of the blood, and thus cutting off the tissues from their normal supply of even the nicotinized product of the habitual smoker.

"It is a nerve poison but its action upon the nerve tissue is exerted through the medium of the blood vessels. It exerts its chief effects upon the respiratory function and the motor nerve cells of the spinal cord and brain. Tobacco, by preventing the elimination of the waste products of nervous activity and preventing the supply of foods and oxygen to rebuild the worn out tissues, operates directly as a cause for nervous disease, as well as mental and moral degeneracy."

Dr. L. Lauder Brunton, the famous English Physician of St. Bartholomew's Hospital and College, says of the action of tobacco upon the heart:

"If tobacco be pushed to too great an extent it is a powerful heart poison and it has a curious effect upon the heart, which, I think, varies according to the kind of tobacco employed." In excess, tobacco "seems to bring on an affection of the heart characterized by extraordinary irregularity. It is impossible to describe the rhythm in words, but it is something like this, and is apparently due to partial paralysis of the vagus nerve. So long as the tobacco is continued this irritability of the heart is likely to last. A curious point about it is that a very little tobacco will keep up this irritability, and that some times it is necessary to tell the patient not merely to lessen the quantity of tobacco

that he is smoking but to stop it altogether until the heart becomes regular.”

Professor Irving Fisher of Yale University, who was recently called upon by the United States Government to make a report on National Vitality, says:

“As to tobacco, it is a common observation that smoking interferes with one’s ‘wind’ in running. The poisons which probably bring about this result include others than nicotine. Possibly the most important poison is carbon monoxide, which has a great affinity for the iron in the blood. When the smoker ‘inhales’ this poison, probably joined with others, it enters directly into the blood stream. In an experiment carried on by Dr. Lombard, ‘smoking was found to have a very depressing effect upon the strength of the voluntary muscular contractions. * * * Undoubtedly the effect of tobacco to lessen the voluntary power is due to its influence upon the central nervous system.’ It is the testimony of many users of tobacco that the habit leads to nervousness and disinclination to exertion directly after smoking. Experimentation has shown that smoking increases blood pressure. The greater resistance to circulation offered by the blood is presumably due to the excitation caused by the introduction into the blood stream of foreign matter from the tobacco. There is reason to believe, though the fact has not been established, that endurance is lessened by high blood pressure.”

Dr. D. H. Krüss, who has recently made himself prominent in the matter of a cure for the tobacco habit, presents his attitude thus:

“The cigarette strikes a direct blow at the most

vital organ of the body. It weakens the heart action. For this reason it is difficult for the cigarette addict to engage in athletics. He finds he is easily winded and is lacking in endurance. He soon loses all ambition to engage in sports, or, in fact, in any useful occupation. Associating with others of his kind, he soon begins to visit the pool rooms. In time he may end up in the juvenile court, reform school or penitentiary. It is estimated that 96 per cent of our youthful criminals are cigarette addicts. The boy with a weakened heart is more apt to succumb to typhoid fever, tuberculosis or other acute diseases which especially tax the heart, should he be stricken down with them. The cigarette injures the boy morally. He is almost as difficult to impress as the cocaine fiend."

Dr. Arthur R. Cushny, at one time professor in the University of Michigan, but now of the University of London is quoted as follows:

"One of the commonest effects of indulgence in tobacco is a chronic inflammation of the throat and upper respiratory passages leading to hoarseness and excessive secretion of the mucous glands. This is explained by the constant application to the throat of an irritating alkali vapor and is probably due to the specific action of the nicotine. A similar irritated condition of the tongue is met with, * * * and it is sometimes stated that the constant irritation thus produced renders the tongue and lip more liable to cancerous disease. Dyspepsia, want of appetite and constant loss of flesh may also be explained by the local irritation produced by the nicotine swallowed in the saliva."

IV

THE SMOKER AND THE SMOKED

In another connection it has already been shown that tobacco smoke contains a long list of drugs highly detrimental to human health. Even smokers probably will concede that the injury accomplished by these agents is in direct proportion to the amount consumed, varying of course with individual resistance. This being true, it follows that the smoker himself is injured most of all, and next to him his immediate associates.

No one will contend that the smoker, even though he inhales, absorbs into his system all of the poisonous products present in tobacco smoke; the remaining part, of course, passes from the smoker's mouth and nostrils to be disseminated in the atmosphere. It is already a scientifically demonstrated fact that individuals associated with smokers are adversely affected by their habits. While the injury is not so great as that produced by direct smoking, yet it is plainly measurable.

Physicians and others have long felt that tobacco smoking by fathers in poorly ventilated rooms has been the cause of many deleterious effects among children. Dr. Leadsworth reports the case of an eight-year-old boy who showed symptoms of severe poisoning. The boy upon being sweated "gave off a marked nicotine odor and stain," although he himself had never used tobacco. Upon further inquiry it was learned that the

father was an inveterate smoker, who persistently indulged in the presence of his children.

Perhaps the most positive demonstration of the effect of tobacco smoke upon the non-smoker comes from a recent experiment performed in Austria. Professor von Frankl-Hochwart of Vienna, a recognized European authority upon narcotic diseases, recently conducted an elaborate series of experiments to determine the effect of tobacco upon the human organism.

His experience had already compelled him to believe that non-smokers are very frequently adversely affected by the smoking of others. For the purpose of his experiment he selected twenty-eight adults, two of whom were women, and all of whom were doctors or assistants in medicine, ranging from twenty to fifty years of age. A small room with doors and windows closed was chosen for the experiment. About twenty-five grams of loose tobacco was smoked by a bellows until the room was completely filled with the fumes. Two persons usually entered the room together. At short intervals measurements and readings were taken of the pulse, the respiration, the blood pressure, and mental action. In all some sixty-two experiments were performed.

Of the twenty-eight subjects four (14%) appear to have been practically immune, while the remaining twenty-four subjects (86%) were visibly affected. Professor von Frankl-Hochwart, who himself is not a smoker, but who has been much in rooms filled with smoke, reports that during the early part of the experiment he experienced a certain mental quickening sim-

ilar to that following the drinking of small quantities of wine. Similar effects were also noticed in others, both smokers and non-smokers. Gradually this mental state gave place to one of discomfort and of dislike for surroundings. An unpleasant bitter taste with flavor of tobacco was experienced. A strong tendency to sleep commonly appeared. Some of the subjects experienced these effects soon after entering the room and others not until some time after leaving. Among the symptoms observed in the subjects were: general restlessness, nervousness, headache, slight faintness and nausea, sometimes inflamed state of the mucous membrane, conjunctivitis and pharyngitis.

The *Lancet*, probably England's greatest medical journal, summarizes the results of Professor von Frankl-Hochwart's experiment as follows: "Turkish tobacco weighing twenty-five grams was burnt in a small room during twenty minutes, and the changes produced in the blood pressure, the pulse rate, and the velocity of psychic reaction were noted in persons who inhaled the air of the room. A number of persons (4) were quite refractory to the effects of the smoke. Others showed at first euphoria, but at a later stage well-marked depression and the not infrequent alteration of the sense of taste called paragensianicotinica. The blood pressure fell, while the pulse rate increased in some persons and diminished in others. If the amount of twenty-five grams of tobacco was smoked in the ordinary way the effects were the same, but came on more rapidly in the persons affected by the smoke."

Tobacco from which the nicotine had been extracted was used in another part of the experiment, but the effect of this smoke was not nearly so disturbing as that derived from the natural product. It would appear from this experiment that nicotine is the principal toxic factor present in tobacco smoke, but it should be borne in mind that none of this tobacco was burned in connection with paper, as in the case of cigarettes, and, therefore, that the harmful effects of acrolein and furfural would, according to the data cited elsewhere in connection with the chemistry of tobacco smoke, in all probability, be absent.

Tobacco smoke should be looked upon as a marked poison, whether used first—or second-handed, its effects being directly proportional to the degree of its concentration. Most persons unaccustomed to the use of tobacco feel a marked dizziness and sickness at the stomach upon being subjected to its smoke, especially if in a closed room. Tobacco smoke in the open probably never becomes sufficiently concentrated to endanger human health, but in closed rooms quite different results are obtained. Smokers at clubs, banquets and at home, not uncommonly show complete disregard for proper ventilation. Even physicians and trained scientists frequently shut themselves up in small rooms and smoke until the atmosphere is literally charged. Fathers at home often follow the practice of smoking just before going to bed even in the presence of their sleeping children. It is by no means an uncommon occurrence for children to sleep in rooms laden with tobacco smoke. As a matter of fact a considerable per-

centage of American children are reared in an atmosphere vitiated and poisoned by such fumes.

This condition is very largely the result of ignorance, and partially perhaps of selfishness. It can hardly be thought, however, that when men once become aware of the injury they are thus imposing upon others that they will insist upon following such a pernicious practice. Unfortunately the opinion is almost universally held by smokers that if any injury is being done they alone are the sufferers. It would hardly seem necessary to argue that a delicate infant would seriously be injured in an atmosphere laden with tobacco smoke, yet parents on every hand may be seen thus abusing their children. The entire organism of the young child is very susceptible to disturbance. There can be no question that many of the ailments appearing in later life are the result of being subjected to tobacco smoke in childhood. If cigarette smoke will reduce lung capacity, shorten the "wind", parch the throat, increase the blood pressure and break down the heart of full grown healthy men, what can be expected of its influence upon babies? Men who would be shocked if their children acquired the habit of smoking not uncommonly complacently fill the home living-room with the fumes of their own indulgence.

There is great need of public enlightenment along these lines. Undoubtedly there are many individuals who are willing to learn, and who upon learning will at once profit thereby. Then there are those who do not care to learn, and who will persist in the pleasure of personal indulgence. It does not require the fore-

sight of a prophet to declare that the time is not far distant when civil law will make it impossible for fathers to smoke in the presence of their children.

Nor is the injury limited to infants and small children. It seems to be very generally believed that the effects of stimulants and narcotics are much more pronounced upon children up to and including those of the adolescent period, than upon adults. It should be borne in mind that the experiments of Professor von Frankl-Hochwart involved only mature individuals, many of whom were habitual users of tobacco, and that 86 per cent of them showed marked signs of mental and physical disturbance upon being subjected to a smoke-laden atmosphere. The question as to its effect upon boys and girls, therefore, needs no discussion. It would be interesting, however, to investigate the effect of early exposure in producing a craving for tobacco a few years later. Do boys reared in smoke-saturated homes acquire the tobacco habit more readily than other boys? In other words does second-hand smoking lead to first-hand smoking? If we are not mistaken the future will answer these questions in a most positive affirmation.

Non-smokers on the other hand also need enlightenment on this matter. They commonly feel that they are avoiding the injurious effects of tobacco by abstaining from its use, and are often quite willing to permit smokers to indulge in their presence. Should any non-smoker feel that he is not affected by the practice of others, let him attempt to perform a difficult mental task in a room filled with the fumes of tobacco smoke,

then let him attempt a similar task in a room filled with clean fresh air. Only now and then non-smokers seem to possess the courage to insist upon their rights. For years and years the congressional chambers at Washington have been stifling with the fumes of tobacco. Recently, however, a southern member of the upper house, who had tasted of the evil effects of smoking, proposed that during official sessions the practice be no longer allowed. His suggestion was adopted.

Science has clearly shown that the evil effects of tobacco are by no means limited to those who use it. Here and there a few non-users are insisting upon their right to breathe the unpoluted air of nature; most of them are not.

V

CIGARETTES ESPECIALLY OBJECTIONABLE

Of all the forms in which tobacco is used the cigarette is without question open to the severest condemnation. While its use is not so filthy a habit as chewing, yet it is more objectionable from other points of view. The cigarette can safely be regarded as the parent of the tobacco habit, for if there were no cigarettes untold numbers of our present smokers would never have acquired the habit. The large majority of tobacco users began with cigarettes. If there were no cigarettes, practically no boys would use tobacco, and if no boys used tobacco very few of them would acquire the habit after having grown up.

The great tobacco companies understand this fact very well, and hence their widespread efforts to put the cigarette in the foreground. Of the millions of dollars spent by these companies in advertising tobacco, it would likely be safe to say that at least ninety per cent has been spent on the cigarette and tobacco designed for its making. When the American tobacco companies began their campaign in China they did not begin with the cigar or chewing tobacco, but with the cigarette, because they knew that the other forms would follow. They have studied the order in which the tobacco habit is acquired and developed just as completely as has the trained teacher the general process of learning. Algebra does not come before arithmetic, neither do cigars before cigarettes.

The cigarette possesses at least three properties that make it especially adapted for use by boys and young men; it is easily obtainable, cheap and mild. Most boys begin smoking without the knowledge or consent of their parents. It is not a difficult matter for the average boy to obtain a five-cent bag of tobacco and hide it away from his father and mother, and this, too, in spite of existing laws prohibiting its sale to minors. A single bag at first will last him and his companions for several days and perhaps weeks. If cigarettes were as difficult to get and cost as much as cigars, very few boys and young men would use them. Then again the cigar and pipe are so strong that they are actually repulsive to most boys even after the cigarette habit has been acquired.

Nearly every state in the Union has enacted laws prohibiting the sale and use of tobacco to boys. The motive behind these laws cannot be questioned, but the practical results are not far different from what they would be if the sale of liquor were prohibited and still it were left on the shelves in full view of customers, or perhaps better still, if its sale were prohibited to the masses and permitted to a chosen few. Of one thing we can be very sure and that is: just so long as the sale of cigarettes is permitted to men they will also be purchased by boys.

Every living individual knows that the command, "Thou shalt not" is invariably followed by a desire "do". To the writer the best woman in the world, when a child, was told by her mother not to look under a certain bowl on the pantry shelf, and then the little

girl was left alone to see if she would obey. A mouse that had been placed under the bowl was missing when the mother returned. She knew what had happened.

Scarcely a normal child in the world would have done otherwise. And sometimes the writer wonders if our practice of prohibiting the use of tobacco to boys, and still leaving it within their reach, is not after all the strongest incentive they have for its use?

The practice involved is diametrically opposed to the best principles of modern thought. We would not place our children in the constant company of thieves if we wish them to remain honest, nor among the underworld if we wish them to be virtuous, nor in the face of contagion if we wish them to remain well. Undoubtedly there are a few who would survive these conditions, but the great mass would succumb.

The wonder really is not that so many boys acquire the cigarette habit, but that so few acquire it. The great credit is due primarily to the influence of the home and the Church. The law-makers are unquestionably well-meaning in what they have done, but peremptory demands are seldom followed by desired results. The Juvenile Court officers have performed a wonderful work under the present handicap, but they are constantly proclaiming their inability to cope with the situation.

And so the cigarette must go. We must remove the temptation from before the eyes of our youth. When the sale and display of cigarettes and cigarette tobacco is prohibited very few boys will learn to smoke. But this prohibition will not be accomplished without a mighty

struggle. The tobacco companies know far better than does the public that this form of tobacco lies at the base of the whole industry. It might here be said by way of parenthesis that those who have studied the tobacco evil are positive that the American people will finally rise up against the manufacture and sale of all forms of tobacco, just as they are now rising against the liquor evil.

But the first step must be prohibition of the manufacture and sale of cigarettes and cigarette tobacco. The present law prohibiting the use of tobacco in any form to minors can be retained with profit, for in spite of its imperfections, it does more good than harm.

* * * * *

From quite another point of view the cigarette is especially objectionable—that is, its physiological effect.

For many years it was popularly believed that cigarette tobacco and especially cigarette paper were treated with foreign substances for the purpose of giving it a “come back” effect. Whatever foundation there may previously have been for this belief there is little reason at present for suspecting that cigarettes are so treated. Cigarette tobacco differs but little from other forms except in its method of preparation. The quality of the various brands depends to a large extent upon the particular blends or mixture employed.

Every student of science knows, however, that deadly poisons very commonly arise through the burning of substances previously harmless. And according to no less an authority than the great American genius, Thomas A. Edison, the smoking of the paper wrapper in connection with cigarettes, produces the virulent

poison *acrolein*. It seems, therefore, that science is far from dispelling any of the odium attached to cigarette paper.

It will be recalled that the experiments conducted in the laboratories of the London *Lancet* showed that more nicotine was actually destroyed in the cigarette than in the cigar or pipe, and that, therefore, from this point of view alone, the cigarette should be the least harmful form of tobacco indulgence. Then again, because of its open, loose texture and rapid burning the cigarette emits less carbon monoxide than either the pipe or the cigar.

Attention has elsewhere been called to the fact that the chemistry of tobacco is by no means identical with that of *tobacco smoke*. It should also be borne in mind that upon the manner in which tobacco is smoked depends the nature and even the presence of certain substances. A slowly smouldering pipe, as just pointed out, will produce considerably more nicotine and carbon monoxide than a rapidly burning cigarette. On the other hand, several dangerous poisons not present in the smoke of either the pipe or the cigar, have been discovered and measured in that of the cigarette. The London *Lancet* has shown that *furfural*, one of the most virulent poisons known, is produced almost exclusively by certain forms of cigarettes, chiefly American (and practically all cigarettes sold in America are reported to be made of American tobacco, in spite of the Egyptian and Turkish names attached to the finished products). The *Lancet* does not seem to be convinced that furfural may not be even more deadly than nicotine.

And so we find in the smoke of cigarettes at least two dangerous substances, furfural and acrolein, not believed to be present in that of either the pipe or the cigar.

The greatest danger of all in connection with the cigarette habit is the almost universal practice of "inhaling". The various poisons enter the body almost exclusively by absorption through the mucous membrane, or lining of the respiratory system. In the case of those who smoke cigars and pipes the smoke comes into contact with the lining of the mouth only. When smoke is inhaled, however, it is conducted through the mouth down into the lungs and then back through the nasal cavity, thus coming into contact with hundreds of square feet of mucous membrane in comparison with a square foot or two when inhaling is not indulged in. The injury accomplished by smoking is almost directly proportional to the area reached by the poisonous fumes. Inhalers are afflicted with all sorts of nasal and throat disturbances not commonly found in other smokers. Smokers never inhale from pipes or cigars unless they are users of very long standing, or unless they began with cigarettes. Inhaling from cigars or pipes is perhaps the most dangerous of all because stronger tobacco is usually involved.

The injury done by inhaling in comparison with ordinary smoking may very readily be judged from the results of the familiar experiment in which the smoke is blown through a moistened handkerchief, first without inhaling and second after inhaling. The difference in discoloration between the two places through which

the smoke was blown is very marked, the first stain being decidedly pronounced and the other scarcely noticeable. The lining of the mouth, throat, lungs and nasal cavity are thus shown to act as a filter in removing certain substances from the tobacco fumes. The constant irritation set up by the deposition of these products upon this delicate lining gives rise to a wide variety of ailments.

Aside from the points just mentioned it should be remembered that nicotine is a very volatile substance, and in consequence, is rapidly forced away from the lighted end of the cigarette toward the smoker's mouth. It is a well known fact among users that as the cigarette becomes shorter it also becomes stronger, due of course to the increased quantity of nicotine. The craving which most smokers have for the "stubs" is evidenced by their hesitancy in parting with them. The last "draw" seems to be equivalent to parting with a life-long friend. There are plainly two dangers in thus completely consuming the cigarette; in the first place practically all of the nicotine is forced into the system, and, secondly, the vapors enter the mouth and lungs at a dangerously high temperature. The latter difficulty partly may be overcome by smoking the cigarette in a holder or stem, but this encourages the smoking of all of it, and thus again increases the quantity of nicotine consumed. In a word, therefore, cigarettes may be said to be especially injurious principally because of the ever-attending practice of inhaling hot fumes heavily laden with a variety of poisons.

It is very generally admitted both by smokers and non-smokers that the most dangerous and elusive form

in which tobacco is used is the cigarette. Naturally enough the manufacturers of tobacco can here and there find smokers who are willing to praise this or that particular brand. We should naturally expect that individuals enamored by a habit would be willing to praise it.

Following are the opinions, however, of three authorities, (numbers without limit could be added) who have studied the matter from an accurate, unbiased, scientific point of view, and whose statements cannot be questioned.

Hudson Maxim, probably the greatest living authority on gas and explosives, has this to say concerning cigarettes:

"Owing to the loose structure of the cigarette its combustion is modified and destructive distillation proceeds with combustion, owing to the incompleteness of oxidation, carbonic oxide inhaled into the lungs enters the blood unresisted, and the damage it does is in direct proportion to the quantities inhaled. Carbonic oxide when inhaled in small quantities produces faintness, dizziness, palpitation of the heart, and a feeling of great heaviness in the feet and legs. These are exactly the effects of the cigarette, and the depression and nervousness which follow as a reaction make the victim crave some balm or tonic for his malaise. He is then led to consume the drug in ever-increasing quantities. If all boys could be made to know that with every breath of cigarette smoke they inhale imbecility and exhale manhood, that they are tapping their arteries as surely and letting their life blood out as truly as though their veins

and arteries were severed, * * * * it ought to deter them some."

Dr. T. D. Crothers, Superintendent Walnut Lodge Hospital, Hartford, Conn., says:

"There can be no question that cigarette smoking is the most perilous of all forms of tobacco. The principal reason is that the products of combustion are drawn directly to the mouth and absorbed, and while the quantity is small, the effects are accumulative. Experience and observation are united in this conclusion that the cigarette smoker is the most degenerate and palsied of all users of tobacco."

Chas. B. Towns, Superintendent Towns Hospital, New York City, says:

"The cigarette smoker almost invariably inhales, and he gets the most harm merely because the bronchial mucous membrane absorbs the poison most rapidly. The tobacco itself is no more harmful than it is in a pipe or a cigar. Furthermore, the tobacco is generally drier in a cigarette and for that reason the combustion is better, for the products of the dry and damp tobacco are not the same. But since it is a little difficult to inhale a pipe or a cigar without choking, the smoke products of a pipe or cigar are usually absorbed only by the mouth, nose and throat, whereas the inhaled smoke of the cigarette is absorbed by the entire area of wind-pipe and bronchial tubes".

Yet, in spite of these facts, the sale and use of cigarettes are rapidly increasing, especially among boys and young men. It would be interesting to know how long the American people will tolerate if not actually encourage the outrage.

VI

ARE MEN IMMUNE?

The absurdity of maintaining that tobacco acts as a virulent poison when taken by boys, but that when used by men, it is somehow transformed into a veritable panacea, must be apparent to all. In spite of this inconsistency, not a few individuals maintain that tobacco when used in moderation by men is harmless, but is dangerous to boys even in the smallest amounts. The difficulty, however, seems to lie in their interpretation of the term "harm". Many smokers seem to consider that no injury is being done unless the system announces it in tones of a trumphet. They want the heart to break down, the breathing to become wheezy, or the eyesight impaired before they will recognize it as "harm". They seem to forget that the whole genius of modern activity is based upon the principle of prevention rather than that of cure. Their attitude would postpone the adoption of sanitary methods until the epidemic had appeared, the locking of the jail until the prisoners had escaped, and the closing of the throttle until the train had been wrecked.

It is a well established fact that the use of tobacco by even the strongest men is often accompanied by such disturbances as high blood pressure, impaired heart action and reduced lung capacity. None or even all of these may be sufficiently pronounced to attract atten-

tion, because of the general vigor and health of the body, which in mature man is so constructed that a great deal of abuse may be imposed long before the results are made manifest. Thousands upon thousands of men who supposed themselves perfectly sound have first learned of some serious ailment, such as weak heart or impaired lungs upon being examined for life insurance or for entrance into the army. The body does not loudly proclaim its troubles until after the reserves have been called into activity, and then only when defeat is apparent. Most smoking grown-ups, however, insist that this must be done before they will admit injury is being accomplished.

The competition and specialization of modern times are compelling bankers, manufacturers, merchants, educators, and in fact leaders in every field of activity, to enquire into the causes of inefficiency among men. No investigation touching the effect of tobacco yet has been reported in which it has not been shown that tobacco users are less efficient than abstainers. Physicians are agreed that smokers present far less resistance to disease than do non-smokers. Manufacturers are beginning to see that tobacco cuts down man's efficiency both with respect to quality and quantity. Athletic directors universally demand abstinence of all participants. Educators have demonstrated beyond all doubt that the use of tobacco is associated with low scholarship. Investigations have shown that even football men (considered the acme of physical perfection) who use tobacco suffer a loss of practically one-tenth (9.4%) of their lung capacity. Tests have been

designed recently by which the tobacco user's loss in efficiency can actually be measured.

The testimonies following, representing as they do, the best thought in practically every phase of human endeavor, should offer a sufficient answer to the question, "Are men immune?"

Chancellor David Starr Jordan, says:

"My impression is that anyone using tobacco is subject to a material lowering of initiative and mental force, this lowering depending upon the age at which smoking began, the amount and kind of smoking, and especially on the kind of intellectual effort the person may put forth. * * * * The finer the man in general the greater the injury. Mr. Harrison, considered the leader of the San Francisco Bar, told me lately that in his judgment tobacco had been a greater source of injury to the legal profession in California than liquor. It is not so destructive but it hits better men. So far as I know tobacco is not strictly a narcotic, which would be bad enough because a man ought to be awake when he is doing a waking man's work, but rather a perpetual irritant. The man who uses tobacco and enjoys it, is only feeling at the time of this use about as a normal man feels all the time. At other times the irritation of the drug causes him to long for it."

Dr. Edmund Andrews, Professor of Surgery, Northwestern University Medical School, Chicago:

"There is no scientific basis for any supposition that after sixteen years of age a person can use tobacco with impunity. It is bad at all ages. The earlier the smoker

begins the worse for him, because he has a longer time in the future to injure himself. The nature of the injury is the same."

Dr. T. D. Crothers, Superintendent of Walunt Lodge Hospital, Hartford, Conn.:

"Accounts of persons who have used tobacco for years without injury are found on examination to be untrue. It is doubtful if any person who uses tobacco continuously is not enfeebled in mind and body, although the damage may not appear from a casual examination."

Wm. H. Allen, Secretary Bureau of Municipal Research, New York:

"Less harm would be done by tobacco if it were more harmful. Like so many other good poisons, its use in small quantities does not produce the prompt, vivid, unequivocal results that remove all doubt as to the user's injuries and intemperance. As inability to see the physiological effect upon himself encourages the tobacco user to continue smoking or chewing, so failure to identify evil physiological effects upon the smoker encourages the non-user to begin smoking or chewing. A very few smokers give up the habit because they fear its results, but too often the man who can see the evil results would rather give up almost anything else. The one motive that most frequently stops inveterate smoking—fear—is the least effective motive in dissuading those who have not yet acquired the habit; every young man, unless already suffering from known heart trouble, thinks he will smoke moderately and without harm."

Charles Wm. Daleney, President University of Cincinnati, Ohio:

"Having learned to smoke as a freshman at college, as most young men in the country did in my time, and having had a struggle with it for some fifteen or twenty years before giving it up, I am in a position to give some personal testimony. In my own case I gave up tobacco completely after I had attained middle age and I know I have enjoyed much better health and am able to work more satisfactorily and, I believe, more worthily since I did so. I make it a point to instruct our young men with regard to this matter regularly."

Sometime ago Luther Burbank, the great American naturalist, was approached by one of his foremen and asked if he was familiar with the habits of the men he had been discharging because of inefficiency, and was astonished to learn that all of them were smokers. Further investigation convinced him of the inefficiency of smokers, and in consequence he no longer employs them where a marked degree of delicacy or close discrimination is required. After investigating the matter he announced that

"Even men who smoke one cigar a day cannot be trusted with some of my most delicate work."

Chas. B. Towns, Superintendent of Towns Hospital, New York:

"Tobacco is harmful to everyone who uses it, old or young. It cannot in any way contribute to anyone's physical or mental uplift. Some men are not so susceptible to the action of this drug as others; some are more economical in its use, and in the way in which

they use it. The reason that some men who have been using it for years apparently are in good health is that they are just a little harder to poison than others."

Dr. J. H. Kellogg, Superintendent Battle Creek Sanitarium, Michigan:

"It is one of the enigmas of modern life that the average business man, the man who demands the highest degree of efficiency in every department of his business, be it factory, store, or office, should continue to use tobacco, knowing that it is one of the deadliest of poisons and one of the worst of all enemies of mental power. It is astonishing that his business sense, his genius for economy, should permit him to consume so much of his energy in a perfectly useless and harmful way. Any man who stops to study himself, who inquires into the means by which he can conserve his vital energy and increase his efficiency, discovers that the first thing to do is to raise the load off his liver and kidneys and other organs: he discovers for instance, that the work which his lungs are required to do in eliminating nicotine is far more than all the work involved in the digestion of food and the performance of intellectual labor, and if he is a wise man, he will drop immediately the use of tobacco."

Smokers who try to console themselves by arguing that they will avoid the evil effects of tobacco by using it in "moderation" will get but little comfort from the following statement by Edward H. Cleveland, M. A., Chaplain of the Riverside Hospital:

"An unprejudiced inquiry into the mental and physiological effects of tobacco-smoking establishes the con-

viction that this habit, even in moderation, is definitely and permanently injurious to both mind and body. So many, indeed, are the scientific facts that point directly to this conclusion that it is difficult to select the most important ones. * * * * * We are not speaking of excessive use, but of moderate use, be it noted. Aside from the well-known principle that moderate use leads to excess, and always tends in that direction, as experience abundantly proves, no one defends the excessive use or abuse of tobacco. Not a single advocate or apologist for its use will venture to claim that the excessive use is beneficial. All agree that tobacco is a poison, to be used in moderation, if at all. This article is written to remind its readers of the very simple proposition that the habitual smoking of tobacco in moderation will, if given time enough, produce similar results in the heart, brain, stomach, lungs and other vital organs to those brought about more rapidly by smoking to excess."

Dr. Harvey W. Wiley, perhaps America's chief authority on foods, has this to say concerning the use of tobacco by grown-ups:

"Of those of maturer years I ask, 'Is the comfort which the use of tobacco gives real happiness?' I answer, 'No, it is illusory'. A man should so order his activities that he needs no comforter except wholesome food, illuminating literature, a fond family, and a progressive community. He who has to seek consolation in a drug is going wrong. There is something out of condition in his make-up. He has a false view of life. Happiness consists in accomplishment, contentment, in

satisfaction with the environment, not in Lethean passivity. There is no place in the normal life for an illusory delight nor a drug-provoked content. Tobacco never has brought and never will bring any real happiness to humanity."

It has been pointed out in another section that even the most nearly physically perfect men of America (football men) are seriously injured by the use of tobacco. If the best men are injured by its use, then certainly there can be no doubt that the rest of us are not immune.

VII

TOBACCO AND ALCOHOL

By no means every tobacco user is a user of alcohol, but on the other hand practically every alcohol user is a user of tobacco. The universality of this association is shown by the following statement of Charles B. Towns, head of the Towns Hospital for the treatment of drug users: "For years I have been dealing with alcoholism and morphinism, have gone into their every phase and aspect, have kept careful and minute details of between six and seven thousand cases, and I have never seen a case, except occasionally with women, which did not have a history of excessive tobacco." A moment's reflection should convince anyone of the intimate association of these two drug habits, if not a short visit to an ordinary saloon will furnish ample proof.

There seem to be two general reasons that the use of tobacco frequently leads to the use of alcohol, first, its social aspect, and, second, its physiological action. The use of tobacco among boys encourages clandestine practices. It carries them into the rougher elements of society. Cigarette smoking boys are not likely to remain home at night, attend church and otherwise live the higher life. On the contrary the habit of smoking is commonly acquired when boys and young men are away from the jurisdiction of their parents. No one ever learned to smoke at church or in the broad day-

light of Christian society. It carries both boys and men into kinds of society which non-smokers would have no reason for entering.

Among grown-ups the use of tobacco encourages attendance at clubs and "busts" and lessens the attraction of the home. Non-smokers have no desire to be present at places filled with the fumes of tobacco. At club banquets, late night parties and similar functions tobacco and alcoholic liquors almost always go together. The life of the smoker is very naturally interwoven with the serving of strong drinks.

In the second place the physiological changes brought on by the use of tobacco call for something stronger to soothe the damaged tissues. Dr. G. Stanley Hall, President of Clark University, explains that: "The basis of intemperance is the effort to secure through drugs the feeling of happiness when happiness does not exist. There are many drugs which cause this pleasure, and in proportion to the delight they seem to give is the real mischief they work. * * * * Alcohol gives a feeling of warmth or vigor or exhilaration when the real warmth or vigor or exhilaration does not exist. Tobacco gives a feeling of rest which is not restfulness. One and all, the various drugs tend to give the impression of a power or a pleasure or an activity which we do not possess. One and all, their function is to force the nervous system to lie. One and all, the result of their habitual use is to render the nervous system incapable of ever telling the truth. One and all, their supposed pleasures are followed by a reaction of sub-

jective pains as spurious and as unreal as the pleasures which they follow."

Of the manner in which the use of tobacco leads to the use of alcoholic beverages Dr. John D. Quackenbos, Emeritus Professor in Columbia University, says: "The first effect of tobacco is stimulating, with a rise of blood-pressure. Sedative effects follow with a fall of blood-pressure, and if smoking is continued the nerves are depressed. The depression is stimulative in the system of the smoker, and after varying intervals of days, weeks or months, it creates an instinctive demand for the antidote to tobacco poisoning, and that is alcohol. The intemperate use of tobacco thus explains seventy-five per cent of all drink habit cases. The alcohol thirst is engendered and inflamed by tobacco."

The interchangeability of habit-forming drugs is a recognized truth in the treatment of drug users. Of this Dr. Kellogg has the following to say: "The fact that these drugs are often used in place of one another is well known. The writer has found a number of cases in which alcohol and morphine have been thus employed. In a case of chronic alcoholism in a woman of sixty-six years of age, a large quantity of coffee had become a ready substitute for alcohol whenever the latter was lacking. The same fact has been found in the matter of alcohol and tobacco. In a number of cases, patients addicted to the two drugs could give up alcohol without any inconvenience provided that tobacco were furnished them in sufficient quantities."

There is probably no greater living authority on the causation of drug habits than Charles B. Towns.

who says: "I am prepared to say that for the phlegmatic man, for the man temporarily moderate, for the outdoor laborer, whose physical exercise tends to counteract the effects of the tobacco and the alcohol he uses—in short, for all men, tobacco is an unfavorable factor which pre-disposes to worse habits. A boy always starts smoking before he starts drinking. If he is disposed to drink, that disposition will be increased by smoking, because the action of tobacco makes it normal for him to feel the need of stimulation. He is likely to go to alcohol to soothe the muscular unrest, to blunt the irritation he received from tobacco. From alcohol he goes to morphine for the same reason. The nervous condition due to excessive drinking is allayed by morphine, just as the various conditions due to excessive smoking are allayed by alcohol. Morphine is the legitimate consequence of alcohol, and alcohol is the legitimate consequence of tobacco. Cigarettes, drink, opium, is the logical and regular series."

"The man predisposed to alcohol by inheritance of nervous temperament will, if he uses tobacco at all, almost invariably use it to excess; and this excess creates a restlessness for which alcohol is the natural antidote. The experience of any type of man is that if he takes a drink when he feels that he has smoked too much, he finds he can at once start smoking all over again. For that reason, the two go together, the neurotic type of man too often combines the two. Tobacco thus develops the necessity for alcohol."

"Again, most men who have used alcohol to excess, if restricted voluntarily or involuntarily, will use to-

bacco to excess. This excess in tobacco produces a narcotic effect which temporarily blunts the craving for alcohol. Another way of saying the same thing is that when smokers are drunk they no longer care to smoke, a fact that is a matter of common observation. This means that there is a nervous condition produced alike by alcohol and tobacco. When a man gets it from drinking, he does not keep on trying to get it from smoking. As well as reacting upon each other, the two habits keep each other going. It is not altogether by hap-hazard association that saloons also sell cigars; they sell them for the same reason that they give away pretzels—to make a man buy more drinks.”

Of the same close relationship between alcohol and tobacco Dr. J. H. Kellogg says:

“What I would especially emphasize is the fact that the physiological effects of tobacco are such that they give birth to a special craving for alcoholic drinks and create a demand for the antidotal effects temporarily produced through alcohol. Perhaps one of the most characteristic effects of tobacco is the excitation of the vasco-constrictor produced by it, as appears from the extreme pallor of the skin. Alcohol, on the contrary, produces, in moderate doses, a totally opposite effect. The smoker’s throat is dry, he feels thirsty, a general mental depression, possibly some dizziness; a single experience is enough to convince him, that beer, wine or whisky or alcohol in any other form very rapidly relieves these alarming symptoms, hence a very natural association of cigars with wine or beer. The consumer of these two drugs, taking them alternately assures

himself of the repetition of agreeable sensations for a long time after tobacco alone has ceased to produce proper enjoyment."

Authorities seem to agree that the proper treatment and care of alcoholism is impossible as long as the patient insists upon using tobacco. Mr. Towns says: "It is very significant that in dealing with alcoholism no real reform can be expected if the patient does not give up tobacco," a statement with which Dr. Kellogg is apparently in full accord, as shown by the following: "For twenty years I have refused to undertake the treatment of cases of alcoholism, without also prescribing as a preliminary the abandonment of tobacco."

Judge Lindsay, regarded as an authority on Juvenile Court Problems, says:

"One of the very worst habits of boyhood is the cigarette habit. This has long been recognized by all the judges of the courts who deal with young criminals and especially by judges of police courts, before whom pass thousands of men every year who are addicted to intemperate habits. These judges know that in nearly every case the drunken sots who appear before them, a disgrace to their parents, themselves and the state, began as boys smoking cigarettes. One bad habit led to another. The nicotine and poison in the cigarette created an appetite for alcoholic drink. The cigarette habit not only had a grip upon them in boyhood, but invited all the other demons of habit to come in and add to the degradation that the cigarette began."

No one will question the authority of Dr. W. S. Hall,

Professor of Physiology of the Northwestern Medical School. He says:

"The use of tobacco paves the way to other dissipation by requiring a compensating stimulant to overcome its sedative effect and by making the common wholesome foods taste insipid and flat. A vast majority of drunkards were smokers before they were drinkers. The mental attitude and lack of resistance which permits a man to smoke is likely also to permit other forms of dissipation."

Again we quote Towns:

"If any one thinks that China is the gainer by substituting the one drug habit for the other, I beg leave to differ with him. The opium smoker smokes in private with other smokers, and is hence not offensive to other people. He is not injuring non-smokers or arousing the curiosity of boys or polluting the atmosphere, or creating a craving in others. In the West the opium habit is generally condemned because the West is able to look with a new and unbiased view on a drug habit that is not its own. I consider that cigarette smoking is the greatest vice devastating humanity today, because it is doing more than any other vice to deteriorate the race. The more you compare smoking and drinking and drugging, the more resemblances you see. Opium, like tobacco and alcohol, ceases to stimulate the moment the effect of it is felt; it then becomes a narcotic. The history of the three as a resort in an emergency is precisely the same. At the time when the average man feels that he needs his faculties most, he will, if addicted to any of the three, deliberately seek

stimulation from it. He does not intend to go on long enough to get the narcotic effect, since that would be clearly defeating his own aims, he means to stop with the stimulant and sedative effect, but that he is unable to do. The inhaler of tobacco gets his effect in precisely the same way that the opium smoker gets his—the rapid absorption by the tissues of the bronchial tubes. It may be news to the average man to hear that the man who smokes opium moderately suffers no more physical deterioration than the man who inhales tobacco moderately. The excessive smoker of cigarettes experiences the same mental and physical disturbance when deprived of them that the opium-smoker experiences when deprived of opium. The medical treatment which is necessary to bring out a physiological change in order to destroy the craving is the same. The effect of giving up the habit is the same—cessation of similar physical and nervous and mental disturbances, gain in bodily weight and energy, and a desire for physical exercise. A like comparison, item for item, may be made with alcohol, but it is the similarity with opium which I wish particularly to emphasize here.”

Tobacco is bad enough of itself, but when its use leads to even more objectionable practices with all their demoralizing tendencies, it certainly deserves serious consideration on the part of the thinking public.

VIII

TOBACCO AND DISEASE

TOBACCO AS A PREDISPOSING FACTOR.—Few investigators would be willing to state that the various diseases and weaknesses commonly associated with the use of tobacco are actually inherited by offspring, but all are agreed that weak debilitated parents cannot give rise to robust healthy children. Civilization is rapidly coming to learn that the physical weaknesses of one generation not uncommonly reappear in the next. The commercial application of this truth can be seen in the operation of life insurance companies, who are very slow to accept applicants whose parents have exhibited pronounced constitutional disorders. The new science of eugenics is based upon the old truth that like begets like.

It would not be safe to state that a smoking-parent, who himself has acquired consumption because of the use of tobacco, will actually transmit the disease to his children, yet it is known that such children are especially predisposed toward it, and sooner or later are likely to develop it. In other words the lungs and general resistance of such children are so greatly impaired that when the germs of tuberculosis appear they encounter but little resistance to their rapid development. It seems to be true that weaknesses, but not actual diseases, may be inherited. Upon this subject, however, the future development of science will give us greater light. In our present consideration, the final answer

matters but little, as in either case the practical results are virtually identical. At any rate it appears to be quite generally admitted that the descendants of inveterate tobacco users suffer abnormally from a variety of diseases, and, as just noted, it matters little whether they are derived through inheritance or predisposition.

The practical application of this matter is two-fold: the excessive use of tobacco not only breaks down the health of the one participating, but it incapacitates him to such an extent that he gives rise to physically inferior offspring. Scientific findings show that immunity from disease depends almost exclusively upon bodily resistance. The germs of disease make their attacks upon all types of people alike. In some cases they are met by strong resistance and quickly overcome, and in others they themselves become victors because of the feeble resistance offered to their development. Anything, therefore, that impairs bodily resistance increases to the same extent the ravages of disease.

It should be no wonder, therefore, that tobacco users are much more susceptible to disease than are the non-users. In another section it has been shown that tobacco impairs practically every vital organ of the body, including prominently the heart and the lungs. Temperate users commonly argue that in their cases the injury is not sufficient to enhance the possibilities of disease, and among such are a great many physicians and others who ought to know better. It is an incontrovertible fact, moreover, that the reduction of bodily resistance, no matter how slight, proportionately increases the spread of disease. The opinion entertained

by smokers to the effect that the temperate use of tobacco entails no danger, is absolutely without scientific foundation. The great battle of life against disease and death is successful just in proportion to the resistance offered. Increase of resistance will be followed by longer and healthier lives, while reduction will always be followed by the opposite.

Many prominent thinkers are alarmed at what they believe to be a continuous deterioration of physical standards. Prominent among such writers is Elmer E. Rittenhouse, President of the Life Extension Institute, who, in recently speaking upon this subject, is quoted as saying: "There are plenty of people who will say that they have noted no such tendency, but we cannot depend upon our observation in our own environment for such information. Nor must we attempt to judge the trend in the nation by our observations in any one class of people. We must take the American people as a body. And when we do this we find the resisting power of the heart, arteries, and kidneys, which work incessantly from birth to the grave, has steadily declined. These organs are breaking down and giving away too soon. The increase in mortality in three decades from these causes has been about 100 per cent, and it is confined to no particular class or element of the population. It is increasing everywhere."

The influence of tobacco in predisposing to disease can be judged by the following statements selected from among the world's most prominent students of this subject:

The *London Lancet* quotes the noted Dr. Piddock as saying: "In no instance is the sin of the father more strikingly visited upon his children than in the sin of tobacco-using. The enervation, the hypochondriasis, hysteris, the insanity, the dwarfish deformities, the consumption, the suffering lives, and the early deaths of children of inveterate smokers bear ample testimony to the feebleness and unsoundness of constitution transmitted by this pernicious habit."

Dr. Charles G. Pease, President of the Non-smokers' Protective League, is quoted as saying: "The use of tobacco is responsible more than any other one factor for race degeneracy. It is the most poisonous plant grown, and its active principle the most poisonous alkaloid, harmfully and deeply affecting the delicate protoplasm of the tissue cells, unfitting the user of it to be a propagator of the human race, robbing his own children of the right to normality."

Dr. D. H. Kress who has recently become well-known because of his success in fighting the tobacco habit, says: "From the use of tobacco, most of our young men are physical degenerates. A few years ago England was startled by the announcement that out of 12,000 men that appeared for examination at Manchester, 9,000 had to be rejected as physically unfit for army service. 'They had come to us with their fingers stained with nicotine,' the examiner said. A few years later, when the call was made for young physicians to enter the United States army, 80 per cent were rejected as unfit, owing to what was pronounced tobacco heart. These represented the

choicest young men these countries could produce. If three-fourths of the young men are unfit for army service, they are certainly unfit to assume the responsibilities of propagators of a fit race." And again: "The prevalence of heart-disease among the young men has increased more than 300 per cent within the last few decades. Tobacco and beer are considered the cause of this alarming degeneracy. A similar condition exists in America. It will be recalled that out of 67 applicants who appeared for examination to enter the medical department of the United States Army in 1902, 43 (nearly two-thirds) were rejected, having what the doctors pronounced 'tobacco heart.' This is especially significant when we bear in mind that those who applied were young men who considered themselves in the pink of health. That such a condition exists in our most highly civilized countries is certainly sufficient reason for alarm, and should lead to a careful investigation of its causes with a view to correcting them. To ascertain the real injury to the race from such a habit, we must necessarily go to the third and fourth generation. We have reached that time, as the results of the tobacco habit are now manifest. As Sir Benjamin Brodie says, 'No evils are so manifestly visited upon the third and fourth generations as the evils which spring from the use of tobacco.' Owing to the rapid decline of the race, special attention has of recent years been called by leading medical men, scientists, religious teachers, and commissions appointed by various nations for the purpose of investigating the causes of the almost universal physical, intellectual, and moral

degeneracy, to the fact that tobacco is responsible for what has, in the past, been attributed to other causes."

The following statement is taken from Dr. Charles E. Slocum's book, *Tobacco and Its Deleterious Effects*: "The deep defects produced by tobacco on the generative system perniciously affect the germ plasm and germ cells and cannot but show blight, more or less, in the children that may be born of parents addicted to this vice. Tobacco, in some ways, even more than the alcoholic-beverage habit, touches forcibly the nerve centers, the medulla oblongata, the spinal center, the generative center, and the great sympathetic nerve centers, leaving therein its trail of debility, defects, and degeneration, all of which affections are in line of transmission to posterity."

TOBACCO AND RECOVERY FROM DISEASE. Tobacco is now known to attack practically every part of the human body both functionally and organically. Its use is not uncommonly associated with a long list of maladies including arteriosclerosis, cancer of the mouth and tongue, tuberculosis, heart disease, stomach trouble, nervousness, etc. Without doubt a great many individuals die of some of these specific diseases brought on by the use of tobacco, yet at the same time a much larger number succumb where tobacco is only a contributory cause.

The reason for the heavy death rate among those addicted to tobacco is thought to be primarily due to reduction of vital resistance. It should be remembered that all patients die or recover from disease depending almost exclusively upon the nature of the fight which

the body is prepared to present. A case in point will make this matter clear. Two acquaintances of the writer were recently sent to a hospital because of appendicitis. Both were large robust men of the type which should live to seventy or beyond. One was a smoker and the other a non-smoker. Each was found to be suffering from a pus case. The smoker died and the non-smoker recovered. So far as could be observed the two cases were of about equal severity, and, therefore, the resistance which each patient was prepared to offer constituted the principal determining factor. The one who recovered did so because his bodily resistance was sufficient to overcome the poisonous pus attacks, and the other died because of insufficient vitality. The death of the smoker was officially charged to appendicitis, while as a matter of fact, it was directly due to tobacco poisoning. *It should be borne in mind that when a man dies say five to ten years before he would normally do so, because of the use of tobacco, he is killed by the poison just as really as though he had died at the time of his first indulgence.*

Defenders of tobacco state that the human body gradually adjusts itself to the use of this substance, and finally establishes a complete immunity to it. They argue that if tobacco were really as poisonous as its opponents assert, cases of tobacco poisoning would be much more frequent. Now, in the first place the human body does not set up an immunity against this poison. The working principle of Ehrlich's bacterial theory does not apply to tobacco. The body does not establish an immunity against this poison in anything

like the same sense as it does against bacterial toxins. It is true, however, that the body does seem to accommodate itself to increasing doses, but this is primarily due to the blunting of the initial resistance and to the operation of the marvelous factor of safety with which nature is so richly endowed. Then, finally, *very large numbers of smokers do die of tobacco poisoning, whose deaths are now attributed to other causes.*

The use of tobacco, therefore, reduces the length of life and increases the death rate in two ways: first, by fostering predisposition to a long list of specific maladies, and, second, by lowering the general bodily resistance to such an extent that death results where otherwise the patient would get well. While the number of deaths from specific diseases among tobacco users is nothing short of appalling, yet those resulting from impaired resistance are without question incomparably greater.

The exact extent to which tobacco is increasing the death rate it as present not known. Many observers believe that its effect is quite as serious as that of alcohol, primarily because of its greater consumption than the latter and the less serious manner in which the public in general regards it. The use of alcohol reduces life to nearly three-fourths of its normal length. It is to be hoped that tobacco does not reach the alarming standard set by this its close associate, but when its exact position is definitely known it will probably not be found far distant.

TOBACCO AND SPECIFIC DISEASES.—*Cancer.*—Of recent years it has been shown that the constant irri-

tation of the lips and tongue induced by the use of tobacco is not uncommonly followed by cancer in these parts. In some cases this condition seems to result largely if not wholly from mechanical causes and is independent of the chemical constituents, while in others the irritating action of the drugs appears to lie at the base of the trouble. Smokers seem to derive a considerable part of their enjoyment through moving about between their lips the cigar, cigarette or pipe. This is particularly so in case of cigar smokers. This constant irritation sooner or later gives rise to pronounced callouses upon the lips and tongue, a condition from which very few old smokers are entirely free. The final appearance of cancer can ordinarily be avoided if the subject abandons the tobacco habit immediately upon the first appearance of any hardening of these organs. It is of course true that many tobacco 'users produce marked callosities upon the tongue and lips without subsequently suffering from this deadly disease. Science, however, of recent years, has observed a marked increase of cancer among smokers.

Dr. Robert Abbe, senior surgeon to Saint Luke's Hospital, New York City, recently contributed a special article to the *Medical Record* in which he described the malignant diseases of the tongue and mouth. In summarizing the causation of these cancerous growths he says: "The charge against nicotine is the most serious in the calendar. It is extremely rare to question a patient with advanced cancer of the mouth and not find that he has been a severe smoker or has chewed tobacco. If the question is answered evasively,

or if he admits only gentle use of tobacco, his wife will usually come to your rescue and say that he either puts in a little chewing tobacco when he rises and takes out a little when he goes to bed, or that he smokes pipes or cigars habitually. This close relation with nicotine was emphasized by Butlin and has been widely believed in. I find complete corroboration in my own experience and have come to regard excessive and continuous use of nicotine as a great risk to susceptible tissues. It is usually after twenty or thirty years that the beginning of an epithelioma shows and insiduously advances. Most often it starts either at the contact points of the pipe, or streams of hot smoke on the tongue, or in the gutters where the nicotine lies in the mouth or where the quid rests between the cheek and gum. 'Smoker's tongue' is a legitimate name for this ill-starred malady. One of the most threatening epitheliomas of the gums which I was fortunate enough to cure by radium, was in a young lady, who for years had been an inveterate smoker of cigarettes."

The same authority says further:

"Last July I published a review of 100 cases of cancer of the tongue and mouth, taken from my private notes during fifteen months where the cause was searched for. I demonstrated that nine-tenths of the patients were inveterate users of tobacco. Thirteen cancers inside the cheek were all found in men who chewed or had chewed. The others were inveterate smokers. I was amazed at the demonstration.

"Letters afterwards came to me, such as one from a man whose mother had died a terrible death from can-

cer of the tongue. He knew his mother had chewed cigars—three cigars a week—for many years, beginning on account of toothache. His physician assured him the habit had nothing to do with the disease: it was impossible for tobacco to cause cancer: that ‘most old people died of cancer anyhow.’

“Dr. Halstead, of Johns Hopkins Hospital, wrote me of a case which had first come to him like one I had quoted, of terrible cancer caused by rubbing snuff on the tongue, or ‘dipping.’

“During the last six weeks I have been consulted by ten patients with grave cancer of the throat or tongue, every one of them heavy smokers, that is, from ten to twelve cigars daily. One man said five pipes a day would not exaggerate. He was one of the finest types of Spanish gentlemen, otherwise unsurpassed in health and physique, but with an advanced cancer of the tongue and floor of the mouth—a hopeless condition.

“One man boasted that he had always smoked cigarettes only, a pack a day of all-tobacco cigarettes, ten in a package. It was difficult to convince him he was the victim of this pleasant habit, but he was beyond saving—a nice chap, poor fellow!

“One handsome woman had beginning epithelioma on the tip of her nose with a seborrheic eczema along one nostril. She smoked cigarettes constantly. With a light radium treatment and abandonment of tobacco her nose was perfect in six weeks.”

Dr. J. H. Kellogg, Superintendent of the Battle Creek Sanitarium, recently issued this strong indictment against tobacco, as a causative factor in cancer:

"There is no chance to doubt that tobacco-using is often the cause of this terrible disease. All eminent surgeons testify that they frequently meet cases of cancer of the lip and tongue which have been occasioned by smoking. A number of such cases have come under our own observation, and we do not doubt that a large share of cancers of the lip and tongue originate in this way. This view is further strengthened by the fact that in the great cancer hospital of London, where more than ten thousand cases of this terrible disease have been treated, the number of men suffering from the disease upon the lip and tongue was three times as great as the number of women so affected, although the female cancer patients outnumbered the men five to one."

In discussing the fatality of this disease Kellogg goes on to state that "hundreds of men die of smoker's cancer every year". General U. S. Grant is known to have died of this indescribable malady, as did also the German emperor, Frederick III.

Tuberculosis.—The use of tobacco is now *definitely* known to strike a powerful blow directly at the lungs and respiratory system in general. The injury accomplished seems to be chiefly due to the marked reduction in lung capacity and to the deposition of dry bronzed coating upon the lining of this organ. Tobacco not only reduces lung capacity, but it impairs the efficiency of that which remains.

Observers everywhere are familiar with the smoker's cough, and especially with that of the cigarette smoker. This affliction often creeps upon its victims so gradually that they are not aware of its presence until attention

is called to it by the consulting physician, or until its effects are so apparent that the victims themselves suddenly come to a realization of the danger. The coughing is directly due to the constant irritant action of the poisonous fumes upon the delicate lining of the throat and lungs. "Smoker's sore throat" has come to be regarded as a distinct malady. The injury done to the throat and lungs has become so apparent that the manufacturers of tobacco are forced to admit it. The hurried reader of magazines and newspapers may commonly overlook this admission in advertisements, declaring in bold type that this or that particular brand of smoking tobacco has neither "bite" nor "sting." A certain chewing gum is now being advertised to relieve dryness of the throat after smoking.

Of the influence of tobacco upon the respiratory system, Dr. Arthur R. Cushny, formerly professor of materia medica at the University of Michigan, says: "One of the commonest effects of indulgence in tobacco is a chronic inflammation of the throat and upper respiratory passages leading to hoarseness and excessive secretion of the mucous glands. This is explained by the constant application to the throat of an irritating alkali vapor and is probably not due to the specific action of nicotine. A similar irritated condition of the tongue is met with."

Individuals whose respiratory organs are thus impaired are but poorly equipped to withstand the ravages of the "great white plague", a disease which under many conditions makes easy inroads even where the lungs are normal. The general vitality of the smoker

is also below that of the non-smoker, another condition favoring the spread of this monster malady.

Health Commissioner Anderson, of Minneapolis, recently refused a license to sell cigarettes at a summer resort in his jurisdiction. In explaining his attitude Commissioner Anderson said: "I am convinced that the cigarette is the cause of much tuberculosis in the country. I happen to be associated with the I. O. O. F. in their efforts to care for consumptives and know from that source that the cigarette starts many lungs wrong."

Dr. J. H. Kellogg has the following to say concerning tobacco and consumption: "The relation of impure air to disease of the lungs is everywhere recognized. It has been very clearly demonstrated that breathing impure air is the great cause of consumption, on account of the effect of poisonous elements upon the blood and upon the lungs. Even the impurities gathered from the blood itself exist in such quantities in air which has been once breathed as to render it unsafe to breathe again. This being the case, it will be readily seen that filling the lungs with nicotinized smoke and the hot fumes of tobacco from a pipe or cigar for several hours a day, cannot but be a most certain cause of lung trouble. Moreover, experience shows this to be the case."

The same authority continues: "There is a very good reason why tobacco should produce consumption. When smoke is brought into the mouth it does not stop there, but goes right down to the lungs. It makes no differences whether the smoke is swallowed or not, for

when air is drawn in some of the smoke comes right along with it and is carried down to the 2,000 square feet of delicate mucous membrane that comprises the lungs. In this way the lung tissues are damaged by the contact with nicotine, prussic acid, and a half dozen other different poisons."

If any further evidence were necessary to prove that tobacco aids consumption in its devastating scourge, it is furnished in the findings of the famous Henry Phipps Institute, established for the treatment of tuberculosis. A recent report from this institution states that tobacco users make very unfavorable progress as compared with those who do not use it. "In 1907, 15.58 per cent of those who used tobacco died as compared with only 5.15 per cent of those who did not use it." In other words, the use of tobacco by tuberculous patients increases the probability of death to three times as great as that of the abstaining patients, or in still other words, among tuberculous patients three times as many tobacco-users die as non-users. Of those who used tobacco only 37.54 per cent showed improvement as compared with 45.36 per cent of those who did not use it. In explaining the great disparity in deaths among users and non-users the report goes on to say: "The preponderance of favorable results for those who did not use tobacco is not quite as large as the preponderance of favorable results for non-alcoholics, but it is also pretty large. The damaging influence of tobacco is probably exercised through the circulation. Tobacco undoubtedly depresses the heart and interferes to some extent with vigorous circulation.

It is generally conceded that anything which depresses the circulation interferes with nutrition and consequently predisposes to tuberculosis, both in implantation and development."

Eye Impairment.—Even the casual observer is familiar with the weakened and inflamed condition of the tobacco-smoker's eyes, especially those of the cigarette-smoker. The weakness is due partially to the constant irritating action of tobacco fumes upon the outer eye, but more particularly to its effect upon the inner eye and optic nerve. The extreme seriousness of this matter is seldom appreciated by the smoker until relief is difficult or even impossible. In its earlier stages the affliction can ordinarily be overcome simply by discontinuing the habit, but in its later stages recovery is hardly probable even under the most expert treatment. The injury commonly manifests itself first in dimness of vision, especially for colors, followed later by partial or complete blindness in one or both eyes.

Science has long since recognized the impairment of vision in tobacco users. Some few years ago Doctor Francis Dowling of Cincinnati made an extensive examination of the eyesight of employees in various tobacco factories. His results indicate that the use of tobacco, and not merely the handling of it, lies at the base of the trouble, for among only habitual and inveterate users were serious defects discovered. Doctor Dowling states that among the employees whose work is to separate the leaves into various grades according to specific tints or colors, the heavy tobacco users are very frequently discharged because of inefficiency. He

goes so far as to believe that inveterate users can be detected in factories because of their waning color sense.

As a result of his investigations, Dr. Dowling gives the following summary of the principal symptoms characterizing chronic tobacco poisoning as affecting the organs of sight: "The subjects who usually suffer with tobacco blindness are almost always males between the ages of 35 and 68. Exceptions to this occasionally occur and in one of my own series of examinations, made some years ago, I found a young boy aged nineteen who represented a well-marked case of this trouble. He was a most inveterate smoker and chewer of tobacco. There is almost always a gradual but progressive failure of visual acuteness in both eyes. This was noticed more or less in a large number of all those I examined. Luminous objects dazzle the eyesight, and a brilliant light is worse for reading than a subdued one. These patients see better in the evening than in the middle of the day. In addition to this, patients often complain of a glimmering mist which covers all objects, especially in a bright light. Persistent contraction of both pupils is generally present, and this was a marked symptom in most of the cases examined by me. This symptom was present in many cases where the men were heavy chewers of tobacco, even where there was very little other evidence of injury. Lastly the examination of the eyes of those affected with tobacco blindness reveals the papilla of the optic nerve to be more than usually red in the early part of the affection. Later it appears anaemic, especially on

the temporal half, and finally wasting of the disc takes place. * * * The outlook for the cure of patients suffering with dullness of vision due to tobacco is good if the patient comes under treatment early; in some cases complete recovery occurs and a very great improvement is the rule. In long standing cases moderate improvement is all he can expect. If smoking is persisted in no improvement takes place under any system of treatment."

The findings of Doctor Dowling in relation to the impairment of vision in tobacco users by no means stands alone. Dr. Cushny, the famous investigator, in his widely used work, *Pharmacology and Therapeutics*, says of the abuse of tobacco: "Another important symptom is dimness of vision, especially for colors and imperfect accommodation, which may go on to complete blindness in one or both eyes. In early cases the retina often appears pale, and if the condition persists, atrophy of the optic nerve may result, probably following on degenerative changes in the ganglion cells of the muscular region of the retina."

The *National Standard Dispensatory*, regarded by the medical profession as one of the highest authorities in existence, says of the physiological effects of tobacco: "It renders the vision weak and uncertain, causing objects to appear nebulous, or creates muscae volitantes and similar subjective perceptions. In numerous instances it is said to have produced amaurosis (blindness). But others decline to describe the effect by that word, employing rather 'scotoma' or simple obscurity

or indistinctness of vision. It usually disappears soon after the use of tobacco is abandoned."

In harmony with what has just been said, it should be noted that most cases of sight impairment due to this cause can be overcome by abandoning the causative factor. The great mass of tobacco users, however, do not attribute dimness of vision to this cause, and even when they become aware of the origin of the trouble they are often slow to sacrifice the habit for the welfare of the choicest and most delicate organ in the entire human body.

Heart Disease.—There can be no doubt of the ill effects of tobacco upon the heart. If no other proof were available its interference with heart action, as shown in the pulse, would be quite sufficient. The heart, like all other organs of the body, is so designed with its remarkable factor of safety that it can be considerably overworked without visibly manifesting the additional strain. As pointed out elsewhere, however, a single cigar or cigarette is quite sufficient to upset the regularity of this most important organ. It is significant that heart disturbance is not confined to those who are unaccustomed to the habit, but is plainly manifest in habitual smokers, a condition which proves that the heart never becomes accustomed to the imposition. It is furthermore apparent that a single indulgence encroaches upon the heart's factor of safety, otherwise its influence would not be manifest.

It should be no wonder, therefore, that the constant nagging of this habit sooner or later results in marked impairment of the human heart, both functionally and

organically. "Tobacco heart" is coming to be regarded as a distinct malady, and one from which a very large percentage of smokers are suffering. Aside from its direct action upon the heart, tobacco is known to affect the nervous system in such a manner as to inhibit or prevent the proper action of this organ, often resulting in immediate death.

There is no dearth of professional opinion to support the view that tobacco damages the heart and leads directly both to organic and functional disturbances. The testimonials of a few of the more prominent scientists will serve the present purpose.

In his work, *Stimulants and Narcotics*, Dr. Kellogg says: "The effect of tobacco upon the heart is indicated by the pulse, which is a most accurate index to the condition of the heart. The pulse of the tobacco user says, in terms as plain as any words could, that his heart is partly paralyzed, that its force and vigor are diminished, that it is, in fact, poisoned. Old smokers, and not a few of those who have indulged but a few years, often suffer with palpitation of the heart, intermittent pulse, and angina pectoris, and other symptoms of derangement of this most important organ. There is, in fact, a diseased condition of the heart which is so characteristic of chronic tobacco poisoning that it has been very appropriately termed 'narcotism of the heart.' Medical statistics show that about one in every four smokers has this condition. There is good evidence for believing that not only functional but organic disease of the heart may be occasioned by the use of tobacco."

The following statement of the part taken by tobacco in heart degeneracy comes from England's famous physician, the great Doctor Lauder Brunton: "If tobacco be pushed to too great an extent it is a powerful heart poison and it has a curious affect upon the heart, which, I think, varies according to the kind of tobacco employed." In excess tobacco "seems to bring on an affection of the heart characterized by extraordinary irregularity. * * * * So long as the tobacco is continued this irritability of the heart is likely to last. A curious point about it is that a very little tobacco will keep up this irritability, and that sometimes it is necessary to tell the patient not merely to lessen the quantity of tobacco that he is smoking but to stop it altogether until the heart becomes regular."

Dr. Arnold Lorand, the famous physician of Carlsbad, Austria, in his work *Old Age Deferred*, says: "Nicotine may exercise a fatal action on various organs—for instance, on the inner parts of the eye and the optic nerve, and the nervous system; but without doubt its most injurious action is on the heart and the stomach. At first it may cause only an irregular pulse and an occasional feeling of stopping of the heart; but if continued, in spite of these symptoms, for a long time, it can undoubtedly produce the condition of atheromatosis (disease of the arteries), and will assist in the development of arteriosclerosis."

The great William Ostler, of whom there is probably no peer in the theory and practice of modern medicine, recently delivered three lectures upon the subject of

heart disease before the Royal College of Physicians of London. In describing the attacks of this disease upon a certain patient, Doctor Ostler states that the individual in question "had lived just the sort of life likely to bring them on—a gross eater, hard worker, heavy smoker". Again, "It is interesting to note that very heavy smokers may die a vague inhibition death, just as we see in *anigma pectoris*. Three robust, healthy persons of my acquaintance, not known to have had heart disease, but all incessant smokers of very strong cigars, died suddenly in this way, without warning—one, aged 53 while walking; one, a man of 36 fell off a chair at his club; the other a man of 38 died on the beach after bathing."

The manner in which tobacco very commonly causes death among its devotees is related in a recent issue of the *British Medical Journal*, as follows: "The late King Edward had what is known as a smoker's throat, and this and the congestion and thickening due to that cause, combined with the loss of elasticity in the lungs, made it increasingly difficult for him to clear his chest. The strain thrown upon the heart by the obstruction to the passage of the blood through the lungs caused by the collection of secretion in the bronchial tubes had its natural sequel in dilation of the right ventricle, and the actual cause of death was heart failure due to the increasing difficulty in pulmonary circulation. It was, in short, a case of a type seen every day in thousands of elderly persons. The cause of death in such cases is purely mechanical, the action of the overlaiden

heart being gradually stopped by increasing resistance in the lungs."

The extent to which heart impairment may be brought on by the use of tobacco depends, of course, upon a number of factors, chiefly the resistance of the individual and the extent of the practice. Some individuals are affected much less seriously than others, but in no case are the results negligible. While the injury in the less pronounced cases may not be sufficient to be counted as heart disease, yet any weakening of this important organ, no matter how slight, will finally make its influence felt, especially in recovery from disease.

Authorities report that great numbers of individuals die annually from sudden strokes of heart disease due to the use of tobacco. There can be no question, however, that a very much larger number of deaths, *attributed to other causes*, are actually the result of heart failure brought on by tobacco poisoning. The writer was personally acquainted with a young man whose death was reported to be due to typhoid fever, while as a matter of fact he would have recovered from this disease had his heart been strong enough to carry him over the crisis. A weakened tobacco heart was the underlying cause of his death. When the full truth is known, and every factor is given its just balance, it will undoubtedly be seen that tobacco is the ultimate cause of untold numbers of deaths now attributed to other causes.

Hardening of the Arteries. That the use of to-

tobacco materially increases the blood pressure can now easily be demonstrated by anyone who cares to investigate the matter. This condition can accurately be determined by examination with the sphygmomanometer, an instrument carried by practically every up-to-date physician. The use of as much tobacco as is contained in a single cigar raises the blood pressure to such an extent that it is easily measurable by means of this instrument. Anyone can determine this matter for himself simply by taking the blood pressure immediately before smoking and say fifteen to twenty minutes after. Eminent authorities state that the continuous use of tobacco commonly results in permanent increase of blood pressure, and that the latter not infrequently results in arteriosclerosis or hardening of the arteries. That high blood pressure is regarded as a grave symptom is shown by the fact that life insurance companies are very slow to accept applicants showing this condition. It usually indicates that disease of the kidneys or other vital organs is threatening or is already present. Aside from showing a serious condition of the entire circulatory system, the heart included, arteriosclerosis is now looked upon as the seat of an almost innumerable variety of ailments.

Tobacco as a causative factor in high blood pressure and hardening of the arteries was recently discussed before the National Conference of Race Betterment by Dr. Daniel Lichty, Senior Consultant of the Rockford City Hospital and President of the Rockford Municipal Tuberculosis Sanitarium. He said in part:

“Much experimentation with tobacco has been made

to ascertain the cause of increase of arteriosclerosis and heart disease, the so-called 'hardening of the arteries', also the cause of interruption of function and nutrition, leading to mental perversion, insanity, sudden deaths and the many palsies. The earliest observations on this line, and which establishes beyond doubt the deleterious action of tobacco upon the arteries, is that of Isaac Adler, demonstrating hardening in the end arteries of rabbits as a result of feeding them with a tea made of tobacco. Boveri confirmed these results by giving this tea by stomach tube, and caused damage at the base of the aorta in ten out of sixteen rabbits, while Baylac on the same line got the same results in each of eight rabbits into which tobacco tea was injected into veins under the skin. Jebrowsky and W. E. Lee obtained the same results in other rabbits by making them inhale tobacco smoke. A great number of experiments with tobacco in this country and Europe obtained results so akin to these that no other conclusion can be entertained. The general conclusion is that a toxic principle in the tobacco is the cause of arteriosclerosis. What more prevalent toxin is present than nicotine or other tobacco toxins?

"Chewing, more than smoking, through absorption and hemolysis also causes an acidosis of the blood which increases blood pressure, strains the heart, impairs the kidneys' function, precipitates the soluble calcium into calcium carbonate, whose granules find lodgment in the lattice framework of the media and produces the arteritis nodosa of arteriosclerosis. The high blood pressure will account for some of the flights

of genius and descends into iniquity of some great minds otherwise blameless. Tobacco toxemia is more to blame than alcohol. A man usually knows when he is drunk, but rarely knows when he is tobacco inebriated."

Dr. F. de Havilland Hall, consulting physician to the great Westminster Hospital, London, recently delivered a striking address before the Medical Society of London on "The Treatment of Arteriosclerosis and High Tension". Concerning the part taken by tobacco this eminent authority said: "Regarding tobacco as one of the factors in the production of arteriosclerosis, I advise that less than two ounces should be smoked weekly, and if the patient can be induced to give it up entirely so much the better. In cases of tachycardia, palpitation, angina, or where the left ventricle is dilated, tobacco should be absolutely excluded. It is very striking how speedily improvement may ensue if tobacco be entirely discontinued. While I was writing this paper, a medical friend consulted me on account of cardiac discomfort and irregularity of heart action. I advised him to give up tobacco and coffee, and when I saw him six weeks later all his cardiac symptoms had disappeared."

Nervousness. The immediate effect of tobacco is that of a narcotic. It soothes and depresses the entire nervous system in such a manner that the individual experiences feelings of well-being and general comfort. Smokers are especially prone to indulge after the performance of tasks involving marked activity either mental or physical, for the reason that the use of to-

bacco seldom fails to reduce nervous tension and to enhance feelings of comfort and repose.

This depressant effect is directly traceable to the narcotic nicotine. The action of this drug upon the nervous system immediately reduces its sensitiveness and otherwise lowers its activity. The seriousness of thus interfering with the operations of nature is clearly pointed out in the citations following.

The *National Standard Dispensatory*, the physicians' highest court of appeals, after stating that the "Essential effects of tobacco are best illustrated by the action of nicotine employed experimentally", goes on to say: "The nervous system, after the debilitating influence of the poison has developed itself, shows its condition by muscular spasm, which begins with tremulousness of the extremities, and gradually involves the whole muscular system, including the respiratory muscles, so that the breathing is oppressed, gasping, and incomplete. This enumeration of effects is sufficient to prove that nicotine acts primarily upon the spinal and sympathetic nervous systems, and not upon the brain." Speaking of the specific effect of the habitually excessive use of tobacco the same high authority says: "It induces a constant sense of uneasiness and nervousness with epigastric sinking or tension, palpitation (irritable heart), hypochondriasis, impaired memory, neuralgia, and frequent urination."

Dr. Solly, the famous physician of St. Thomas Hospital, England, is quoted as saying: "I know of no single vice which does so much harm as smoking. It is a snare and delusion. It soothes the excited nervous

system at the time, to render it more feeble and irritable ultimately. I have had a large experience in brain diseases, and I am satisfied that smoking is a most noxious habit. I know of no other cause or agent that so much tends to bring on functional disease, and through this in the end to lead to organic disease of the brain."

Dr. Kellogg, in his work *Neurasthenia or Nervous Exhaustion*, in discussing the part played by tobacco, says: "The toxic effect of tobacco upon the sympathetic nervous system is shown by the nausea, vertigo and great depression generally produced by the first pipe or cigar in the 'would be' devotee of the drug. Trembling of the hands, intermittent beating of the heart, shortness of breath and loss of endurance are effects which regularly follow the habitual use of tobacco. No intelligent trainer will permit a man preparing for an athletic event to make use of tobacco in any form. A large proportion of young men who are refused admission to the army at the recruiting bureaus are rejected because of neurasthenic symptoms due to the use of tobacco. The man whose nerves are unsteady and who cannot work without his pipe or cigar has already become a tobacco neurasthenic."

In another article dealing with the fundamental causes of nervousness Dr. Kellogg says further: "Particularly serious is the effect of tobacco upon the nervous system, an effect which manifests itself in a wide variety of ways. One person is easily startled, another is abnormally irritable, cross and irascible; another suffers from insomnia, and others from trembling of the hands.

For the time being, tobacco sometimes appears to give tone and steadiness to the nerves, but this effect is deceptive and the ultimate effect is to increase the very difficulty which it has the appearance of benefiting. The writer has known of many cases of women and children who suffered seriously from nervous disorders due in a very large part to the influence upon the system of the poisonous fumes of tobacco which they inhaled in the poison laden atmosphere of their homes. The best proof, perhaps, of the injurious nature of the drug is the fact that in scores of cases which we have observed nervous symptoms have entirely disappeared with the disuse of tobacco in every form."

Dr. Charles L. Hamilton is authority for the following comprehensive statement concerning the effect of tobacco upon the nervous system: "The nervous system is often profoundly affected, largely through impaired nutrition affecting the nerve cells and through them the proper generation of nerve force. This weakened muscular action, twitching, tremor, etc., with languor, general weakness, inability to concentrate thought, insomnia, a sense of oppression in the brain, dizziness; which symptoms may increase into a true dementia unless the use of cigarettes be stopped in proper time. Many educators as well as physicians note the fact that school boys who use cigarettes do not learn as readily as those who do not use them, and in consequence they fall behind in their classes and finally drop out of school entirely."

It has been held by some investigators that the effect of tobacco upon the nervous system is functional rather

than organic; that is, it disturbs the process of operation but not the organ itself. More recent evidence, however, seems to prove that the use of tobacco actually produces degeneration in the cells themselves. The *Scientific Temperance Journal* reports the findings of Buillian and Gy, two European scientists who recently conducted a series of experiments on animals, as follows: "The injuries discovered consisted almost entirely of changes in the fine granular bodies of the cells which became diminished in number, cloudy and discolored; and in the appearance of 'vacuoles' or places in the cells in which the characteristic network had disappeared. Their extension over the entire cells means the disappearance or death of the cell. Not all of the cells were damaged to the same extent in the tobacco poisoned animals. Cells injured in varying degrees would be found in the midst of others entirely sound. The authors state expressly that the different poisonous substances seem to show in tobacco poisoning a special affinity for the nerve cells. It is here that the maximum damage is found. These lesions, they say, are interesting to know, and to put parallel with the multiplicity of nervous symptoms observed so often in experimental tobacco poisoning as well as in the human subject. 'With men, or at least with certain subjects, the prolonged and immoderate use of tobacco often causes disorders of the intellect, such as difficulty of attention, inability to fix or associate ideas.' "

Light smokers, and those who are just acquiring the habit, seldom use tobacco while working, especially when deep and concentrated thought is required, but

heavy habitual smokers commonly indulge during such activity. To those who have not become thoroughly inured to its narcotic effect, tobacco so reduces desire for activity that good work cannot be done while under its influence. The efforts of nature, however, to accommodate itself to the depressant action of this narcotic, sooner or later terminate in a highly nervous condition, especially when the effects of the drug are removed. Many inveterate smokers, therefore, are almost helpless if deprived of tobacco during periods demanding marked mental activity. The writer is personally acquainted with a prominent mining engineer whose nervous system has been so completely upset by heavy smoking that he is totally unable to transact the ordinary business of his office without the use of tobacco.

The seriousness of interfering in the slightest degree with the natural operations of the nervous system should be fully apparent when it is borne in mind that one of its chief functions is that of monitor, indicating the physical condition of the body. The nervous system is to the body what the complicated system of signals is to the railroad engineer. From the position of the arms of the semaphore or the color of the lights displayed, the engineer is informed of the nature of the track ahead, and from the signals displayed by the nervous system the human mind is informed of the body's condition. Any interference with the position of the arms of the semaphore or with the color of the lights at once destroys the usefulness of this otherwise reliable system.

The whole civilized world would cry out against the

man who would replace the red light on a signalling device by a white one, or who would change the semaphore arm from horizontal to vertical, yet in the case of human bodies identically the same thing is imposed millions of times each day, and that too without censure or care. Strangely enough the human family seems to regard interference with mechanical devices as far more serious than interference with the natural operations of their own bodies. An individual who would knowingly cause a railroad disaster resulting in the loss of his own life would everywhere be regarded as a suicide, yet he may knowingly bring on premature death through the use of various poisonous substances, and then be buried with Christian honors. The time will come when society will exact of men full compliance with known law, and when men who bring about sickness and premature death through injurious habits will be regarded as not far removed from those who cause death violently.

Science has shown that the use of tobacco is not only a predisposing factor to disease in offspring, through its vitiating influence upon the body, but that some of the most dreaded diseases known to the human race are commonly experienced by those who use it. And still it seems that smokers are willing to pay the price.

IX

PHYSICAL ACTIVITY

If no other indictment could be made against the tobacco habit the attitude of the combined athletic coaches of the world should be sufficient. No one ever heard of a coach permitting his men under training to smoke. And why not? Because it has been demonstrated in hundreds of cases that smokers lack the final "grit", tact, and physical endurance demanded of athletes. It is universally admitted that if victory is to be expected in a game of ball, a race, a hammer throw, a high jump, or a pole vault, participants must give up all tobacco and otherwise train for the event. This admission ought to be sufficient to convince the average man that tobacco is not good for him. Furthermore, athletes constitute the height of human perfection. If tobacco is injurious to our most nearly physically perfect men, what can be expected of its effect upon the average or under average individual?

Some years ago Dr. W. P. Lombard of the University of Michigan, showed that the use of even very small amounts of tobacco in the form of smoke materially impairs the working power of the human muscle. His experiments were made with Mosso's ergograph (work-recorder), an ingenious device arranged to test and record the strength of the fingers when lifting weights attached to a cord passing over a pulley. Dr. Lombard's experiments showed that the muscle power

began to diminish in from five to ten minutes after the subject began to smoke an ordinary cigar, and at the close of an hour, after the cigar had been burned, it had fallen to twenty-five per cent of its initial value. The total work of the time of depression, compared with a similar normal period, was as 24.2 to 44.8. In other words, the total work accomplished while under the immediate effects of tobacco was only fifty-four per cent of that accomplished without it. Tobacco users commonly regard these findings as little short of the ridiculous, but in fairness to all it should be remembered that smokers do not seem to be aware of their deficiencies. One of the chief dangers of tobacco lies in the fact that it convinces men that they are normal when they are below normal—it makes them feel that they are doing full days' work when in reality they are but poorly proficient.

In an article captioned "The Effects of Nicotine", published in the *Arena* for February, 1897, Dr. Jay W. Seaver of Yale University, presents some interesting data relative to the physical development of male students at that institution. Dr. Seaver says: "A tabulation of the records of the students who entered Yale in nine years, when all of the young men were examined and measured, shows that the smokers averaged fifteen months older than the non-smokers, but that their size—except in weight, which was one and four-tenths kilograms (about three pounds) more—was inferior in height to the extent of seven millimeters, and in lung capacity to the extent of eighty cubic centimeters. The observed rate of growth at this age would

lead us to expect that the smokers, from their greater age would surpass the others by one kilogram in weight, two millimeters in height, and one hundred cubic centimeters in lung capacity." And again: "The effect of nicotine on growth is very measurable, and the following figures are presented as a fairly satisfactory demonstration of the extent of the interference with growth that may be expected in boys from 16 to 25 years of age, when they are believed to have reached their full maturity. For purposes of comparison the men composing a class in Yale have been divided into three groups. The first is made up of those who do not use tobacco in any form; the second consists of those who have used it regularly for at least a year of the college course; the third group includes the irregular users. A compilation of the anthropometric data on this basis shows that during the period of undergraduate life, which is essentially three and one-half years, the first group grows in weight 10.4 per cent more than the second, and 6.6 per cent more than the third. In height the first group grows 24 per cent more than the second, and 11 per cent more than the third; in girth of chest the first group grows 26.7 per cent more than the second, and 22 per cent more than the third; in capacity of lungs the first group gains 77 per cent more than the second, and 49.5 per cent more than the third."

It will be observed that the advantages of growth are all in favor of the non-smoker. At the time of entrance, the non-smokers were more than one year (15 months) younger than the smokers, yet they surpassed

them in lung capacity by eighty cubic centimeters (about five cubic inches). Calculated at the same age according to the observed rate of growth, the non-smokers would possess one hundred eighty cubic centimeters greater lung capacity than the smokers. In other words, smoking is here shown to be associated with a reduction in lung capacity of fully five per cent of the normal. Furthermore, the smokers, who were already deficient upon entering the university, fell farther and farther behind the non-smokers during the three years of residence.

It is now quite generally admitted even among smokers that the use of tobacco by adolescents is highly injurious, and should be discouraged. Most smokers will admit that tobacco is injurious to some adults, especially those of highly nervous temperament. Defenders of tobacco, however, commonly argue that many individuals, especially those of robust physique, are virtually immune.

Perhaps the most important question in the entire tobacco problem is this: "Are the ill effects of the use of tobacco limited to adolescents, to those who have an idiosyncrasy against it, and to those who use it excessively, or does it injure everyone who uses it, even the most physically perfect?"

Young and middle-aged men of the robust type almost universally declare that the tobacco habit is doing them no harm, yet there are multitudes of such men, now grown old, who willingly admit that their lives would have been far better without it. There assuredly is a reason for the fact that no one ever heard an old

man advise a young one to smoke. And, furthermore, middle-aged men almost never encourage others to take up the habit. Every non-smoker has had the experience of refusing tobacco proffered him, and of receiving the reply, "Well, you are better off without it".

With a view to ascertaining the effect of smoking upon the very strongest types of men, the present writer recently requested the athletic coaches of several American universities to co-operate with him in an investigation of the matter. The subjects selected for this purpose were football men,—men who are everywhere regarded as practically the height of physical perfection. In most institutions even the slightest defect is sufficient to bar a candidate from participation. If any argument is necessary to convince the average business man of the high physical standards required of candidates for position on American football teams, he need only apply for examination. The great bulk of American business men, and for that matter the great bulk of all Americans, are wholly unprepared for such work.

The principal reason for asking the co-operation of a large number of coaches obviously was to obtain the records of a great many men: averages, of course, are much more reliable where large numbers are involved.

The blank forms sent out to the various athletic directors provided spaces for the following data: age, weight, lung capacity, and other more or less important information. The students were also to be designated as "smokers" or "non-smokers". The following footnote appeared on each blank. "By 'smoker' is meant one

who habitually smokes when not in training and not an individual who indulges at very infrequent intervals." In the matter of "try outs" the coaches were asked to state how many smokers and how many non-smokers participated, and how many of each group were successful in "making the team".

It will not be possible to include a constant number of institutions or men in each of the items following, as the blanks which were returned were only partially filled in; some of the institutions supplied one series of data and some another. In the item of "try outs" six institutions reported on 210 men; in the item of "smokers or non-smokers" fourteen institutions reported on 237 men; and six institutions reported 108 men with respect to "lung capacity". In each of the items following the number of men involved will be designated and also the number of institutions from which they were reported.

The accompanying table gives the names of the institutions co-operating and the number of smokers and non-smokers in each. Very incomplete data were submitted by three other institutions, two of which appended notes to the effect that the information was not wholly reliable. In the third institution the football squad contained no smokers. It may be well to state that the University of Utah is not included in any of the computations, as the team contained no smokers, and, further, not any of the men who tried for positions were smokers.

Institution.	Smokers.	Non-smokers.	Total.
Amherst College	9	9	18
Drake University	2	9	11
Haverford College	4	17	21
Michigan Agricultural College	3	14	17
Northwestern University	12	5	17
Tulane University	7	14	21
U. S. Naval Academy	7	5	12
University of Colorado	5	7	12
University of Kansas	10	9	19
University of Montana	12	7	19
University of Pennsylvania ...	12	12	24
University of Tennessee	11	10	21
Western Maryland College	7	12	19
Yankton University	8	9	17
	109	139	248

As stated, six institutions furnished data relating to the "try outs". A total of 210 men contested for positions on the first teams; of this number 93 were smokers and 117 were non-smokers. Of those who were successful 31 were smokers and 77 were non-smokers. The following tabulation will make this matter clear:

Try Outs.

	Number Competing	Number Successful	Per cent Successful
Smokers	93	31	33.3
Non-smokers	117	77	65.8
Six institutions reporting.			

It will be observed that scarcely one-half as many smokers as non-smokers were successful. The conclusion that smokers stand but little chance with non-smokers in obtaining places on football squads is shown not only by the *total* of the six institutions, but by *each* of the six institutions. In the following tabulation the inferiority of the smokers is shown in every case:

	Number Competing for place	Number Successful	Per cent Successful
Institution A			
Smokers	11	2	18.2
Non-smokers	19	11	57.9
Institution B			
Smokers	10	4	40
Non-smokers	25	17	68
Institution C			
Smokers	28	7	25
Non-smokers	17	14	82
Institution D			
Smokers	28	11	39.3
Non-smokers	15	10	66.6
Institution E			
Smokers	10	7	70
Non-smokers	15	12	80
Institution F			
Smokers	6	0	0
Non-smokers	26	15	57.7

The following table shows the relation between smoking and lung capacity:

	No.	Av. Wt.	Av. Age	Av. Lung Cap.
Smokers . .	47	162.9 lbs.	21.06 yrs.	286.3 cu. in.
Non-smokers	61	159.6 lbs.	20.88 yrs.	308.9 cu. in.
Difference .		3.3 lbs.	.18 yrs.	22.6 cu. in.
Six institutions reporting.				

It will be observed that although the smokers are 3.3 pounds heavier and two months older yet their lung capacity is 22.6 cubic inches below that of the non-smokers. Inasmuch as the smokers are heavier than the non-smokers their lung capacity should, from the law of averages, be correspondingly greater. The following computation is based upon the weight and lung capacity of the non-smoker.

Non-smoker's lung capacity at 159.6 pounds is 308.9 cubic inches.

Smoker's lung capacity at 162.9 pounds is 286.3 cubic inches.

Smoker's lung capacity at 162.9 pounds *should be 315.3 cubic inches.*

Smoker's loss in lung capacity is 29.0 cubic inches, or 9.2 per cent of normal.

In its effect upon lung capacity the habit of smoking stands strongly indicted. The evidence just presented seems to be nothing less than proof positive, especially when it is noted in the following table that the smokers show a decided loss in lung capacity in *every one of the six institutions reporting:*

	Av. weight in pounds	Av. lung capacity in cu. in.	Loss in lung capacity in cu. in.
Institution A			
Non-smokers	.161.8	289.1	
Smokers	167.4	284.3	
Smokers at ..	167.4 should have	299.1	14.8
Institution B			
Non-smokers	.161.3	287	
Smokers	166.8	291	
Smokers at ..	166.8 should have	296.8	5.8
Institution C			
Non-smokers	.159.7	357	
Smokers	156	336.6	
Smokers at ..	156 should have	348.9	12.3
Institution D			
Non-smokers	.170.2	333.8	
Smokers	175.3	313	
Smokers at ..	175.3 should have	343.8	30.8
Institution E			
Non-smokers	.149.3	296.7	
Smokers	152.5	264.3	
Smokers at ..	152.5 should have	303	33.7
Institution F			
Non-smokers	.157.7	278	
Smokers	158.7	268.1	
Smokers at ..	158.7 should have	279.8	11.7

This investigation of the comparative standing of smokers and non-smokers in American football squads has brought out at least two important points: first, that only half as many smokers as non-smokers are successful in "making the team", or, in other words, the habit of smoking reduces one's chances of success

just fifty per cent, and, second, that smoking is associated with loss in lung capacity of 9.2 per cent. These figures possess the double reliability of not only being the results of averages, but of holding true in every institution. There might be some ground for questioning the reliability of these figures if the number of men examined were small, or perhaps, if they all came from one institution, but involving as they do a large number of men living in nearly every section of the United States, and measured by a number of examiners, all of whom independently found the same conditions, there apparently can be no room for doubting the findings.

These figures mean much to the writer in accounting for the delinquencies of smokers in field work. Aside from the fact that tobacco actually predisposes against physical activity, here is positive proof of the users' inferiority. In long distance endurance tests, even in the case of normal individuals, the lungs gave way before other organs of the body. The long distance runner does not fall at the tape primarily because his legs are unable to sustain his body, but because his lungs have not been able to supply the body with sufficient oxygen. It would, therefore, be useless to expect that smokers, with practically ten per cent reduction in lung capacity can successfully compete with non-smokers in long distance endurance tests.

Another valuable lesson can be learned from these figures. They prove that the flower of American manhood is injured even by a moderate use of tobacco. Certainly there is no room left for argument as to its effect upon the average man.

And these findings are by no means an exception. Scores of investigations have shown the same thing; in fact no investigation, relating to the effect of tobacco upon physical development, has yet been made in which tobacco has not been found to be closely associated with a wide variety of physical weaknesses.

It is no wonder, therefore, that athletic directors and coaches everywhere are declaiming against its use; if it were necessary a volume of testimony could be obtained from them, and not one of them would have a word of praise for it.

The following interesting story was recently told by "Eddie" Collins, the great second-baseman at the time with the Philadelphia American team:

"A few years ago a company, manufacturing a certain brand of cigarettes, was very eager to print Wagner's (Honus Wagner, the veteran short-stop of the Pittsburg Nationals) autographed photograph on little cards that could be inserted in the boxes. They sent a man to see him at his home in Carnegie, Pennsylvania. The delegate was wise enough to secure an intermediary, a Pittsburg newspaper man who knew Wagner well. The newspaper man was to close the deal and receive a fat commission. He offered Wagner \$500 for the use of his name, then \$1000. Finally he handed Hans the blank check and told him to write in his own figures. 'No,' said Wagner, stubbornly. 'Why not?' asked the newspaper man in amazement. 'I thought all you ball players were money crazy.' 'I'll tell you,' said Wagner, 'it isn't worth the money to me to encourage any boy to smoke cigarettes. If my name and picture on a card will have that result, I'm

not going to sign up, no matter how high you go with your offers.' ”

Cy Young, the great baseball pitcher, recently outlined his attitude towards smoking as follows:

“I smoked years ago, cigars and pipe. I had to quit because of throat trouble. I found I was much better physically after I quit smoking. I don't believe that any athlete should smoke cigarettes, in fact I can't see a man smoking cigarettes without feeling sorry for him. Cigarettes and booze—they get the youngsters who start in the game hoping to climb to the top. Here's a piece of advice to these youngsters. You can't hit .300 in the Red Eye League and get by in the big show. You can't smoke cigarettes and burn 'em over the pan with telling effect. Cigarettes ruin more ball players than glass arms ever did.”

The following testimonies of athletic directors should be of interest:

G. A. May, Department of Physical Education, University of Michigan:

“We strictly prohibit the use of tobacco in any form for all men in training on our various athletic teams, because of its injurious effects upon the nervous and digestive systems. For the same reasons, the use of tobacco in general is discouraged, especially during the growing and developmental period of life, in order that the best mental and physical results may be obtained.”

Fred Bennion, Athletic Director, University of Montana:

“Take two boys, call them ‘A’ and ‘B’ of equal intelligence, equal morality, and equal physical ability,

neither of them smoking. One of them, 'A' does not use tobacco in any form during his entire boyhood, which is the greatest period of preparation for an athletic career. The other, 'B', begins to smoke and finally becomes a habitual user of tobacco. Although both boys were equal in the beginning, the longer 'B' uses tobacco the greater will be the difference between 'A' and 'B' in the qualities that go to make a good athlete. By the time both boys are old enough to try out for a high school or university team, 'B' will have very little chance to compete with 'A', for 'A' will have better lungs, better heart, better thinking ability, and more moral courage to play fair. A boy has small chance of becoming a successful athlete if he uses tobacco in any form."

Jacob Bolin, late Professor of Physical Education, University of Utah:

"Tobacco in any form—cigarettes, cigars, pipe, chewing—destroys a boy's chance of becoming a prominent athlete, because it destroys his 'wind', that is, his endurance, and his 'nerve', that is, his steadiness. The smoker has upon the average only three quarters as much endurance as the one who does not smoke. This is proven in several colleges. The smoker's nerve is inferior; he cannot get off at the shot, or he gets off before hand, his mind is wandering, he is not to be relied upon at the moment, when everything depends on him."

It would be well if every man in America could be forced to ask himself, in the light of the foregoing facts, whether he can afford to use tobacco.

X

TOBACCO AND COLLEGE SCHOLARSHIP

It is held by many educators that one of the most serious and widespread problems now facing American universities and colleges is the use of tobacco among students. No investigation touching the influence of tobacco has yet been reported in which smoking in general is associated with high scholastic standing. It is only rarely the case that heavy tobacco users attain to positions of honor in college life. It is everywhere reported, on the other hand, that the great mass of those failing in their work are smokers. The following statement of President A. R. Taylor of the James Millikan University gives a fair insight into present conditions:

"Permit me to say that in an experience of forty-one years with some 20,000 students, I have seldom seen habitual users of tobacco on the scholastic honor list nor many of them winning forensic prizes. On the contrary almost all the squads of delinquents, both scholastically and ethically, have been habitual users of the weed, the cigarette predominating. Experience soon taught me to eliminate them at once from among the candidates applying for faculty appointments, for a large majority of them, living sedentary lives, had proved excessively nervous, erratic in their habits and unreliable in many ways. Some of them were excellent and popular instructors, but when their life work was

approaching its best, broke down and left their positions, ostensibly on account of ill health. I know it true of two otherwise fine fellows, who in their early prime left their chairs recently, one of them dying inside a few weeks; their intimate friends ascribed it to the long time, excessive use of cigarettes and strong cigars."

The tobacco problem in colleges has become so serious that at a recent national educational gathering in California President Jordan said that it would be far "better if college presidents did not smoke because of the bad example that is being set students, not alone in using tobacco but in lacking the self-restraint not to cast aside a habit they know or should know to be harmful."

The following quotations, selected at random from more than fifty in the writer's possession, convey a fair impression of the experience university presidents have had and are having with the tobacco problem:

Frank B. Fretter, Acting President, West Virginia University, says:

"Our experience is the common experience; that is, those addicted to the use of tobacco, especially cigarettes, are generally poor students."

F. W. McNair, President Michigan College of Mines, Houghton, Mich., gives the results of his experience thus:

"In a long career I have had frequently to insist that students must reduce their consumption of tobacco if they proposed to carry their college work. It has been a matter of remark of this faculty for years that

any large use of tobacco lowers a student's mental efficiency."

Henry A. Buchtel, Chancellor University of Denver, University Park, Colorado, recently wrote:

"I have observed, as all educational people have observed, that students who are tobacco users are greatly handicapped. They are never as efficient mentally or physically as are those students who are free from this enervating habit."

James R. Day, Chancellor Syracuse University, New York, says:

"I believe it (the tobacco habit) is harmful and only harmful, especially to young men of college age, beside being an unmitigated nuisance and a wicked use of money."

E. B. Bryan, President Colgate University, Hamilton, New York, epitomizes his experience in the following concise statement:

"My observation of the effects of tobacco on collegians is that of every other person—always hurtful and never helpful."

John C. Futrall, President University of Arkansas, Fayetteville, Ark., says:

"I believe that the use of cigarettes by boys and immature persons is injurious. I think I have observed that most boys who use cigarettes to any great extent are injured thereby. It seems to me that the use of cigarettes by boys affects their mental alertness, their physical health, their moral stamina, and their trustworthiness and reliability."

Authorities inform us that tobacco acts as a depressant and irritant to both body and mind, and, in consequence, it naturally should be expected that its users are inferior both physically and mentally to abstainers, a condition, however, which tobacco-users in general will not for an instant admit. It will be shown later that smokers even of low mental calibre regard themselves as the equal of the most brilliant. Smokers usually take it as a matter of insolent affrontery when any mention is made of their inferior mentality, and if they deign to reply at all they ordinarily do so by pointing to the fact that this or that great man is a user of tobacco, and that the majority of business men are also adherents.

Because of the great variety of disturbing factors it has been difficult for investigators to determine the exact comparative ability of smokers and non-smokers in their various daily occupations. In order satisfactorily to arrive at a definite conclusion concerning the effect of tobacco upon mentality, an investigation must compare men similar in physical make-up, mental aptitude, habits of eating, exercise, recreation and rest, and in fact similar in every respect except in the use of tobacco and its effects upon them. In the absence of similar conditions and practices throughout, some single factor might be sufficient partially to offset or to accentuate the effects of the narcotic. Such an ideal homogenous group of individuals is of course quite impossible to obtain, and in consequence, we shall probably never be able to measure the *exact* amount of harm accomplished by tobacco among men in business

life. Yet as will later appear, whenever comparisons have been made, the use of tobacco has invariably been coupled with inferior mentality.

It should readily be admitted by every thinking man that single instances of efficiency or lack of efficiency constitute no standard by which to judge the whole. The fact that John Jones who was mentally brilliant at a very advanced stage, and who was an inveterate user or complete abstainer, constitutes no argument in favor or against tobacco. Unfortunately this kind of argument is altogether too commonly used by both parties to the tobacco question. The only satisfactory standard of judging such a condition is by the law of averages, involving of course very large numbers of individuals; absolute accuracy is then obtainable only when an infinite number is involved. It is possible, however, with a relatively small number to arrive at conclusions which for all practical purposes are fully as useful as the more exact ones. If, for instance, it were shown by the average of one hundred cases that tobacco increased or decreased the efficiency by say ten per cent, such a figure would be equally as serviceable as one of ten and one-eighth per cent derived from the examination of a million men. The point is this: conclusions based upon single individuals are not reliable; absolute precision can be obtained only from an infinite number, but for all practical purposes serviceable conclusions can be obtained from a relatively large number.

It should be noted, therefore, that absolute precision is not claimed for any of the following figures

relating to the association of tobacco and low mentality; they may be slightly too high or too low, but sufficient individuals have in each case been used so that the law of averages makes them sufficiently exact for all practical purposes. While there seems to be no direct means at hand of determining the precise mentality of smokers and non-smokers in commercial life, yet among students in the grades, in the high schools and in the colleges such comparisons are easily and accurately made. If it is found that the use of tobacco reduces the mentality of not only the immature children of the grades but that of the mature and most physically perfect college men, then certainly individuals outside of college cannot claim immunity to its poisonous effects.

In searching for a field in which disturbing factors are removed, and in which these arguments would not apply, it occurred to the present writer that the college football squad fulfills practically every requirement. In the first place the men are all athletes approaching physical perfection, a fact which tends to unify their mental attitude as well as their physical. Training rules make the same requirements of all; they eat the same kind of food, they take the same amount of exercise and recreation, and the same amount of sleep. Of recent years the eligibility rules have made it well-nigh impossible for transients and low-scholarship men to "make the team"; the regulations require all men to carry full courses, not only during the year of participation, but also during the previous year. Soci-

ally and in every other respect the football men form a group just about as homogenous as could be desired. Because of the absence of practically all disturbing factors the present writer selected these men as the subject of an investigation.

From the outset it was quite apparent that reliable conclusions could not be drawn from a group of men as small as that comprising a single football squad, and, in consequence, a number of the larger American universities and colleges were asked to co-operate in the matter. Uniform blanks were sent out to the various athletic directors calling for data relating to age, weight, lung capacity, and scholastic standing together with other more or less important information. The students were to be designated as "smokers" or "non-smokers".

The following data relating to scholarship, and involving a total of 182 men, were supplied by twelve American universities and colleges situated in various sections of the United States:

	No. of Men.	Total Marks.	Average Mark.
Smokers	81	6,034	74.5%
Non-smokers	101	8,021	79.4%

It will be observed that the smokers average 4.9% below the non-smokers. From the following table it can be seen that the smokers are inferior in *each of the twelve institutions*, a fact which strongly indicates that smokers are universally inferior:

Institution.	Smoker.	Non-smoker.	Institution.	Smoker.	Non-smoker. •
A	65.2	69.8	G	74.0	75.0
B	64.7	74.6	H	75.2	79.4
C	78.8	81.1	I	81.6	88.4
D	75.8	77.6	J	78.5	81.3
E	84.6	84.8	K	74.0	84.6
F	69.6	71.3	L	77.3	77.6

A tabulation of each of the reports coming from the twelve institutions, shows that the smokers furnish 71 per cent of the lowest marks, and the non-smokers only 29 per cent. The smokers furnish 31 per cent of the highest marks, and the non-smokers 69 per cent. These figures are based upon an equal number in each class.

When it is borne in mind that *these men constitute the most nearly physically perfect type of manhood*, that in order to be eligible they must be good standard students, and that during the athletic season, at least, they are all required to observe certain specific regulations with respect to diet, exercise and recreation, it must be apparent that the results of this investigation as below summarized constitute but little short of complete proof that tobacco is conducive to low scholarship.

1. The smokers' marks are lower than the non-smokers' in every one of the twelve institutions reporting.

2. The average difference in percentage is 4.9. Using the non-smokers as a standard, this means that the use of tobacco reduces the mentality of the highest type of physical manhood a little more than six per cent.

3. Smokers furnish less than one-third of the most successful students, and more than two-thirds of the poorest ones.

For the purpose of further ascertaining the connection between smoking and scholarship the present writer recently undertook an investigation involving one hundred male students at the University of Utah. A mature and wholly reliable upper-classman was asked to bring in the names of fifty smokers and fifty non-smokers; he was kept ignorant of the purpose for which they were to be used. After the two lists were completed the writer personally examined the records of each of the students and listed the findings. The average results, however, were so disparaging to the smokers that the writer concluded some mistake must have been made. It appeared possible that the student preparing the lists may have discerned the purpose for which they were wanted and had become biased in his selection. The results were regarded as unreliable, and in consequence were not made public.

The following year another investigation was undertaken, this time involving every male student at the institution. In order to avoid bias or personal prejudice in the designation of students as smokers or non-smokers, a committee was chosen, consisting of twelve to fifteen students ranging from sophomores to graduates, half of whom were smokers and half non-smokers. The committee, with the writer present, agreed that the following regulations would govern its decisions;

All designations must be made by unanimous approval.

Only habitual users shall be designated "smokers".

Only complete abstainers shall be designated "non-smokers".

Occasional users shall be eliminated.

Individuals whose personal habits are not known to the committee shall also be eliminated.

The committee went through the list of students as published in the catalogue, name by name, designating them as "smokers", "non-smokers" or subjects for elimination. Occasionally a question arose as to the exact group into which an individual should be placed, and if agreement could not be reached he was eliminated from consideration. As a whole the work proceeded with marked dispatch and harmony.

At this point it will be well to bear in mind that all of the students involved in this investigation were unanimously passed upon by a sworn committee of smokers and non-smokers, who were acquainted with the personal habits of each individual in question, and, therefore, that personal bias of any kind has been avoided.

As in the previous investigation, the official record of each student was examined and the results transferred to blanks providing space for the following information: Name of student, number of credit-hours for which registered, number of credit-hours obtained, withdrawals, conditions, failures, incomplete work, and grades in per cent. The cards were then independently checked by two assistants.

At the University of Utah sixteen hours of work each semester, or thirty-two hours per year, are regarded as a substantial course. Students are not permitted to register for more than thirty-six hours per year except by special permission. At the time of this investigation the grades were reported by instructors in percentages. Students were also grouped as "classified" and "unclassified", depending upon whether or not they had met entrance and other specific requirements. The following table shows the number, distribution, and scholastic standing of the smokers and non-smokers:

Smokers.	Credit-hrs.		Grade	
	No. Registered	for. Obtained.	Credits.	Grade.
Unclassified . .	19	33.4	15.3	1103 72.1%
Classified . . .	42	35.8	24.0	1876 78.2%
<hr/>		<hr/>	<hr/>	<hr/>
Total	61	Av. 35.0	21.3	1636 76.8%
Non-Smokers.				
Unclassified . .	43	36.8	28.4	2206 77.7%
Classified . . .	129	35.6	30.5	2429 79.6%
<hr/>		<hr/>	<hr/>	<hr/>
Total	172	Av. 35.9	29.9	2373 79.4%

It is of interest to observe that the smokers registered for 35.0 credit-hours of work and obtained credit upon the official records for only 21.3 hours, or 60.9% of the whole, while the non-smokers registered for 35.9 credit-hours and obtained credit for 29.9 hours or 83.3% of the whole.

Furthermore, aside from completing much less work than the non-smokers, the smokers did it less efficiently, as shown in the column at the extreme right. Both quality and quantity are taken into account in the column headed "grade-credits", of which the average smoker secured 1636 and the average non-smoker 2373. In other words the smokers actually performed and secured credit for 31.1% less work than the non-smokers.

Other data secured in this investigation show just about the same degree of inferiority among the smokers. For convenience in comparison, the figures in the following table are based upon an equal number (172) of students in each group:

	SMOKERS.		NON-SMOKERS.	
	No. of Hours.	Average per Student.	No. of Hours.	Average per Student.
Withdrawals from				
class	425	2.5	204	1.2
Conditions	569	3.3	294	1.7
Failures	104	.6	31	.2
Incomplete work .	161	.9	62	.3
No marks	958	5.6	392	2.3
Dropped from class	109	.6	23	.1
<hr/>				
Delinquencies . .	2326	13.5	1006	5.8

The disparity in these figures is quite in harmony with that previously presented, as shown by the fact that smokers furnish nearly two and one-half times as many deficiencies as the non-smokers.

Only sixteen per cent of the smokers completed all of the work for which they were registered, while thirty-one per cent of the non-smokers presented complete records.

Four, out of the sixty-one smokers, were dropped from the institution because of unsatisfactory work; not a single individual of the one hundred seventy two non-smokers was thus dropped.

Mention was made at the beginning of this section that the results obtained from an investigation conducted the previous year and involving fifty smokers and fifty non-smokers were regarded as unreliable because of what appeared to be a pronounced inferiority of the smokers. The accuracy of these figures, however, is confirmed by the second investigation involving a much larger number of students.

The principal value of this inquiry lies in the fact that it undertakes to determine the percentage of *work completed* of the amount undertaken. Most other investigations have sought to ascertain only the relative quality of work completed. It, of course, has been known for a long time that smokers do inferior work, yet it is certainly nothing short of startling to learn that, in this case at least, they actually complete thirty-one per cent less work than the non-smokers.

Individuals most vigorously opposed to the use of tobacco had scarcely believed that its ill effects are so intense, especially among practically mature men.

Some few years ago, Mr. E. L. Clarke of Clark College, Worcester, Massachusetts, undertook a study of the effects of smoking on students of that institution.

All of the men involved in the investigation were in attendance between the years 1906 and 1909 and were representative of practically every social class. They were regarded, however, as the scholarship type rather than the athletic.

The designation of the class (smoker or non-smoker) to which each belonged was left largely with the individual concerned. In consequence of the fact that many young men are loath to admit the use of tobacco, it may be the case that a few smokers are actually classified in the non-smokers' group. A point of interest, however, is that no abstainer is willing to classify himself as a user, and, in consequence, dependence may be placed upon the statement that all men listed "habitual smokers" actually belong where they are placed. Mr. Clarke reports that in their preference for pipes or cigarettes the men were about equally divided. The results of the classification follow:

	Number of Men.	Percentage of the Whole.
Habitual smokers	41	20.4
Occasional smokers	52	25.9
Non-smokers	108	53.7
	<hr/> 201	<hr/> 100.

The mental ability of the men was based upon the grades they had received, these in the case of seniors being their final marks, and of under-classmen the last

semester's marks. The grades were properly evaluated according to the quality of the work accomplished and the extent of the courses.

Students not carrying sufficient work to make possible their graduation in the prescribed time (three years) were designated as four-year men. Note was also made of students dropped from the institution for "deficiency in scholarship or for other reasons". The following table shows the scholastic attainments of each group:

	No.	Grades %	Comple- ed in 3 yrs. %	4-year Men %	Dropped from Insti- tution %
Habit'l smokers	41	78	61.0	19.5	19.5
Occas'l smokers	52	79	84.6	11.5	3.8
Non-smokers	108	83	94.4	4.6	1.9

A good many significant facts are revealed by this table:

In addition to doing the work five per cent less efficiently than the non-smokers, only 61% of the habitual smokers completed the work on schedule time, while 94.4% of the non-smokers so completed it.

The percentage of four-year men is more than four times as great among the habitual smokers than among non-smokers.

The percentage of habitual smokers dropped from the institution is more than ten times as great as that of the non-smokers.

Another part of Mr. Clarke's study was the com-

parison of ten smokers and ten non-smokers. The smokers constituted all of the men in the classes from 1907 to 1910 who had learned to smoke *after* coming to college. At the time of entrance, therefore, all of the men were abstainers. In an effort to avoid unfairness the ten non-smokers were chosen alphabetically to pair with the smokers. The following table shows the scholastic standing of each group at the time of entering and leaving college:

	Marks upon Entering per cent	Marks upon Leaving per cent	Change per cent
Smokers	83	76	—7
Non-smokers	82	84	+2

When the men, who later became smokers, entered college, they were slightly superior to the other abstainers, but upon beginning to smoke they lost ground and were soon overtaken by the improving non-smokers, so that at the time of leaving college they were much poorer students than when they entered. Specifically, at entrance, the smokers' group stood one per cent above the non-smokers', while at leaving, it was eight per cent below, making a relative loss of nine per cent.

These figures would seem to indicate that even though the use of tobacco may not be *acquired until early manhood*, it has a very powerful effect in reducing mental efficiency.

Dr. George H. Meylan's study of 223 students at Columbia University has developed a variety of interesting facts. These students included all of the members of two classes whose records could be obtained, all of whom were freshmen and sophomores. Records were made at the time of entering, and at the end of two years, as well as at intervals throughout the period. Of the total number, 115 or 52% were smokers, and 108 or 48% were non-smokers. The following table shows the standing of the two groups:

	Age at Entrance Years	Grades at Entrance per cent	Grades during 2 yrs. per cent	Failures during 2 yrs. No.
Smokers	18.8	89	62	10
Non-smokers . .	18.0	91	69	4

At the time of entrance the smokers were nearly ten months older than the non-smokers, and were two per cent below them in the matter of scholarship. Throughout the two years' work, however, they fell to seven per cent below the non-smokers, and furnished two and one-half times as many failures. In this connection it is interesting to note that the average age at which the smokers acquired the habit was 16.6 years, or 2.2 years before they entered college, and, therefore, that these differences are not the result of cumulative effects extending over a long period of time.

The findings further show that even among fraternity men whose social practices as a whole are very much alike, the non-smokers rank in scholarship practically ten per cent above the smokers.

Dr. Meylan in summarizing the results of his investigation says, "It has been conclusively shown in this study and also by Mr. Clarke that the use of tobacco by college students is closely associated with idleness, lack of ambition, lack of application, and low scholarship."

One of the most valuable studies thus far undertaken of the influence of tobacco upon mental efficiency is that of Dr. A. D. Bush of the University of Vermont. The chief value of his findings lies in the fact that smoking is shown to be an *active* factor in the reduction of mental activity. Heretofore when smokers were forced to admit that tobacco and low scholarship go hand in hand, they have attempted to defend its use by arguing that other factors such as social activity and athletic participation are the real causes. They have even argued that students are not low mentally because they smoke, but that they smoke because they are low mentally. While there may be some truth, and probably is, in both of these arguments, it now seems to be definitely shown the the use of tobacco actually decreases mental efficiency.

In order to avoid any misinterpretation which might arise because of some possible temporary effect upon abstainers used in such an experiment, it was decided to employ only *regular smokers*. Originally twenty-five men were arranged for, but several failed to complete the experiments and others were eliminated because of impartial attitude. The fifteen men who completed the work were "medical students, ranging in age from twenty-one to thirty-two years, of varying previous ex-

perience from the farm laborer to the life-long student, of divergent mental capacity from the failure to the honor student, and of differing habits as to tobacco addiction". A few of this number were regarded as moderate users, while the others were probably above rather than below the average. The pipe seemed to be in general favor, although both cigars and cigarettes had their devotees.

The experiment was designed to test the mental ability of each member of the group, both before and after smoking, and thus to determine its influence upon mental efficiency. The tests were arranged in order, the simplest first, so that various functions ranging from simple perception to simple reasoning might be brought into play. The subjects were urged to perform the work of each test (except the seventh) with as much dispatch as possible. In a few cases where these instructions were not rigidly followed the results were eliminated.

The work of testing extended over a number of days. At a time when each of the subjects was reasonably free from the effects of previous smoking, he was comfortably seated and carried through the tests a number of times; the average of the results were taken as the individual's response. Then he was permitted to smoke quietly for a period of fifteen minutes, immediately after which he again underwent testing, and an average was obtained as before. The fifteen subjects each underwent twelve (4 and 8 double) independent experiments, which, counting the repetitions, means that 1,500 tests were made from which to draw

the final conclusions. Tobacco in various forms and of various grades was employed at different times.

Dr. Bush's summary relating to the mental aspect of his investigation follows:

1. A series of 120 tests on each of fifteen men, in several different psychic fields, show that tobacco smoking produces a 10.5 per cent decrease in mental efficiency.

2. The greatest actual loss was in the field of imagery, twenty-two per cent.

3. The three greatest losses were in the fields of imagery, perception and association.

4. The greatest loss, in these experiments, occurred with cigarettes.

It would appear, therefore, that the anxiety of the university presidents is well founded. A practice that destroys as much as ten per cent of a college man's efficiency certainly constitutes a menace that will injure him throughout his entire life.

XI

ATTITUDE OF THE BUSINESS WORLD TOWARDS TOBACCO

Wm. H. Allen in his commendable work "Civics and Health" says concerning the tobacco habit: "No young man expects to obtain a favorable hearing if he offers himself for employment while smoking or chewing tobacco. Business men dislike to receive tobacco-scented messengers."

Modern business competition demands more and more the elimination of deterring factors. Almost every phase of commercial activity is striving for increased efficiency. Mine operators are daily replacing costly machines with others that will perform the work even a few per cent better. The equipment of milling plants is constantly undergoing replacement. Factories of every description are being remodelled. Improved devices are being sought in every field of commercial activity. Factory superintendents, merchants, salesmen, engineers and traffic managers are everywhere working overtime for the elimination of waste.

Practically every successful business enterprise employs an efficiency engineer, whose duty is to eliminate non-essentials and improve devices. Efficiency surveys in up-to-date establishments are becoming essential to continuance in business.

Experience is repeatedly showing that the slightest

margin commonly stands between success and failure. Establishments are failing daily which might have remained in business simply by increasing their efficiency one or two per cent. Success and failure do not commonly follow widely divergent paths; their courses usually lie close together and separated only by a film of difference. The business world knows that the efficiency movement has come to stay, and that the ruinous half-hearted methods of the past can never be re-employed.

Along with the improvement of mechanical devices, employers are looking to the improvement of their employees. Their habits are being investigated and to some extent regulated. Business does not regard a fifty-per-cent-efficient employee as a good asset, and, in consequence, institutions are looking not only to the conservation of the health of the employees but to the improvement of their health as well. In some quarters it has long been suspected that the use of tobacco reduces efficiency both mental and physical, but until recently, business men have not taken a very decided stand against it. Today, however, a large part of the business world is awakening to the seriousness of the situation, and a great many of the bankers, manufacturers and merchants are already protesting against it.

Mr. O. S. Marden, editor of *Success* and author of several commendable books, has the following to say concerning the attitude of the business world toward the cigarette habit: "Cigarette smoking is no longer simply a moral question. The great business world has taken it up as a deadly enemy of advancement and

achievement. Leading business firms all over the country have put the cigarette on the prohibited list. In Detroit alone sixty-one merchants have agreed not to employ the cigarette user."

Anyone investigating the matter for the first time will be greatly surprised to learn of the widespread opposition among business men to the use of tobacco by their employees. This is none the less surprising, and much more impressive, when it is known that a large percentage of the business men themselves are smokers. The greatest protest comes, of course, against the cigarette, and particularly when used by boys, but, on the other hand, there is a rapidly growing opposition to tobacco in any form.

The chief objections that the business world almost universally urges against this habit are that it reduces both mental and physical ability, it blunts the moral sense of right and wrong, and it detracts from one's personal appearance. Science has repeatedly shown that the use of tobacco is accompanied by a reduction of both mental and physical activity by about ten per cent, a loss which is far from permissible in enterprising establishments. The sedative or benumbing effect of tobacco also detracts from the moral sense of right and wrong. Tasks which seem highly important before smoking are often forgotten or passed over slightly after indulgence. It was Elbert Hubbard who warned the business world against cigarette smokers in the following language: "If you want a man who will train on, flee the cigarettist as you would a pestilence.

* * * * *

Never advance the pay of a cigarette

smoker—never promote him—never depend upon him to carry a roll to Gomez, unless you do not care for Gomez, and are willing to lose the roll.”

Then again the tobacco habit is positively repulsive to many people, men as well as women. No one has ever maintained that it adds to personal appearance, and, furthermore, nearly every tobacco user loses sight of the fact that the odor is exceedingly offensive to non-users, a condition which must be reckoned with by business men.

Following are the opinions of a rather large number of America's leading financiers, railroad men, manufacturers, merchants, naturalists and bankers. The list as it stands forms an indictment against the tobacco habit which no young man can afford to disregard. The number of quotations could be increased almost indefinitely.

FINANCIERS. If Andrew Carnegie, the noted financier and philanthropist, should appear in any city in the United States to lecture upon the general subject of business success, every young man in the country would be there to hear him. The following is a report of a public lecture that he recently gave dealing with the tobacco habit:

“There was another danger, not to compare with the first, still it was one which he ventured to bring to their attention, the use of tobacco. What was said of liquor could be said of tobacco. It could do them no good, that it did many harm went without saying. It was not long ago considered a nice habit for a gentleman. He had always admired the young lady, who when

asked if she disliked gentlemen to smoke in her presence, replied that she didn't know, no gentleman had ever tried. He knew that he spoke in this case to a host of sinners. Probably very few in this audience were saints in this respect, and, as in this particular he happened to be a perfect saint, it was embarrassing to preach. There were many here among the older men he doubted not, who wished they had not become slaves to the habit in their youth. He had known some instances where men were able to conquer the habit, but it was a severe trial. Smoking tobacco would do them no good, while it might become a habit which would enslave them. Why should they run that risk? In youth it was easy to abstain but the appetite once formed it was not easy to break their chains. To young men having their living to make he ventured to suggest that it was also an expensive habit. Not seldom, he believed, the sum spent by a young man upon tobacco, if saved for twenty years at five per cent, compound interest, would give him a very nice nest egg in the bank—perhaps justifying him, if they added the liquor account, in asking the angel he admired to take him in charge. The principal point that could be urged against tobacco was that it had injured and was injuring many of their fellows from excessive use. Like most bad and seductive things the line between use and abuse could rarely be maintained, and he said, therefore, about tobacco as he did about alcohol, there was danger in it then why not insure themselves? Life was a game, which required them to equip themselves with every possible advantage to play it from scratch,

and to strip themselves of every impediment that might hamper them in the race. There was no use in taking chances by becoming handicapped by either alcohol or the tobacco habit."

Mr. Jesse Knight, probably Utah's most popular financier, gives his estimate of the cigarette smoker in the following language: "Smoking is injurious to anybody. The boy who contracts this habit soon becomes a slave to it. Few men would select him for a position of trust in competition with the boy who does not smoke, and should he engage in occupation requiring great physical effort, he is soon outclassed by the non-smoker."

RAILROAD MEN. Carelessness and unreliability accompanying the use of cigarettes caused E. H. Harri-man, the great railroad magnate, to state that he "would as soon have an insane man at the throttle of a locomotive as a cigarette smoker".

Not long ago John Murphy, general superintendent of the Pittsburg Railways Company, posted a notice in the barns of the company calling attention of the employees to the fact that the company would no longer retain in its employment men who used intoxicating liquors or cigarettes. In explaining the cause for this action, Mr. Murphy stated that as an officer of a company carrying over two hundred twenty-five million people per year it became his moral duty to protect the lives of the traveling public against all possible accidents. He said that he had observed that the standard of men who used cigarettes was much below that of those who did not. Further, "I have been criticized

for the stringency of the order, especially for prohibition of the use of cigarettes, but, on the other hand, I have the assurance of our division superintendents (of whom we have twelve), aided by my own observations, that persons addicted to the use of cigarettes, especially young men, are the most careless in their duties, and less able to perform them than men using liquor in moderation."

Vice-President Parker of the Chicago & Rock Island Railroad is quoted as saying: "In my judgment it is impossible for a cigarette smoker to make a good railroad man. As a rule smokers are dull and half asleep most of the time. These are not the kind of men the Rock Island wants to operate its trains and its great system, which is daily responsible for the lives of thousands of people."

MANUFACTURERS.—The great Avery Company of Peoria, Illinois, considers the health of its employees such an asset that it follows the practice of issuing regular health bulletins for their information. In a recent number life insurance tables are reproduced showing that the allotted life-time for the most healthy men ranges close to the biblical "three score and ten". The bulletin states, "there is just one way to beat these figures; that is, to be so healthy that when the old man with the scythe comes along you will be standing so straight on your legs that he can't cut you down". Attention is called to the fact that one of the principle sources of disease is "poisons taken into the body in food and drink, such as tea, coffee, tobacco, alcohol, and many drugs and patent medicines". It goes on to

state that these drugs are simply temporary props and that good health is impossible without their discontinuance.

Several years ago the Cadillac Motor Car Company of Detroit, Michigan, began an active investigation into the merits of the cigarette habit, and as a result recently stated that "cigarette smokers invariably were loose in their morals and very apt to be untruthful, and were far less productive than men who were not cigarette smokers". The company has placed notices about the plants discouraging the use of cigarettes among employees and stating that hereafter those addicted to the habit will not be employed. The company gave as one reason for this action its belief that "men who do not smoke cigarettes or frequent the saloon can make better automobiles than those who do".

The J. C. Ayer Company, manufacturing chemists, should be prepared officially to discuss the action of drugs. Dr. C. H. Stowell, treasurer of the company, recently said, "Close observation for many years among boys employed by this company has shown that those who are most energetic, active, alert, quick, spry, do not smoke; while the listless, lazy, dull, sleepy, uninteresting boys, are, we find upon investigation, those who smoke cigarettes." The company has issued this statement to its employes: "Believing that smoking cigarettes is injurious to both mind and body, thereby unfitting young men for their best work, therefore, after this date we will not employ any young man under twenty-one years of age who smokes cigarettes."

Swift & Company, the great meat packers of Amer-

ica, have a line in their application form for employment as follows: "Do you smoke cigarettes?" The company recently stated: "We try to discourage the practice and feel that the effect is very bad, probably the greatest single evil among boys today."

Peet Brothers, the well-known manufacturers of laundry and toilet soaps, state: "We are strongly against cigarette smoking by young or old men of any age, and we endeavor not to employ men who have this habit."

The Crunden Martin Manufacturing Company of St. Louis give the following as their attitude toward cigarettes: "There is no question but what evidence of a confirmed habit of cigarette smoking is detrimental to the securing of a position, and there is no question but what it is, though tolerated, not generally looked upon favorably by business men, even though they smoke cigarettes themselves."

The Irving-Pitt Manufacturing Company, makers of the famous I. P. loose leaf books, state: "We certainly discriminate against employees, particularly young men and boys, addicted to the use of cigarettes. We have no statistics available as to the efficiency or inefficiency of employees using cigarettes, but we prefer to avoid employing them on general principles."

Albers Brothers Milling Company, of Portland, Oregon, give the following as their attitude: "Boys and young men who are addicted to the use of cigarettes are not welcome by this company as employees. Cigarette smoking is classified by us as being one of the Bad Habits, and one that has a tendency to be very injur-

ious. If it is followed very persistently it takes away the smoker's health and strength, and decreases his efficiency to a large degree. This has been our experience and we make it a point to discriminate particularly against the excessive smoker of this class."

Maple Flake Mills, of Battle Creek, Michigan, have this to say: "We do not hire cigarette fiends. We are satisfied that no young man can be up to par in efficiency and general reliability who is a confirmed cigarette smoker."

Loss of time, occasioned by the use of tobacco, can readily be seen by anyone who cares to observe. It perhaps can best be calculated where the number of men involved is large, say on some public works. In such cases an actual count will commonly show that practically one-fourth of the total number are constantly engaged in preparing cigarettes, and this does not include the time lost in smoking them. The commonly advanced argument that men need rest, and, therefore, that the time is not lost, will not hold, for it is now known that nearly, if not quite, as much energy is consumed in smoking as in working. Smoking, therefore, is by no means rest.

An officer of the Colorado Yule Marble Company recently stated that an investigation had shown that the company was getting twenty per cent more value out of its men since an order prohibiting smoking had been issued. He himself is a heavy smoker, but not during business hours. It would be safe to say that the great majority of successful contractors and other employers of manual labor have already observed this needless

loss of time, and many of them have at least partially overcome it by prohibiting smoking during working hours. The fact should not be lost sight of, however, that the use of tobacco during any time of the day lowers both mental and physical ability, and, therefore, that total abstinence is the only complete remedy.

MERCHANTS.—Marshal Field and Company, considered America's greatest department store operators, place themselves on record as follows: "For many years it has been our policy not to engage boys who make a practice of smoking cigarettes, as we believe it to be detrimental to their development."

John Wanamaker, commonly spoken of as the merchant prince of America, has this to say concerning cigarettists: "The question of the use of tobacco and cigarettes by the young men who make application to us for employment comes in for serious consideration, and where there is evidence of the excessive use of cigarettes the applicant is invariably refused a place in our ranks."

George W. Alden, head of a big mercantile establishment of Brockton, Massachusetts, is quoted as follows: "So far as I know none of my employees smokes cigarettes. We don't hire that kind of boys or men. I should not consider for a minute any candidate for a position if I knew that he smoked cigarettes. It would be pretty strongly against him if he applied for a position with either a cigar, pipe or cigarette in his mouth. With the general knowledge prevalent in this state as to the injurious effects of cigarette smoking, any boy should have ambition enough and decision

enough to let cigarettes alone. My observation has taught me that cigarette smoking boys are woefully lacking in both ambition and decision. They soon become dull, smoke-befuddled boys. I let them know that cigarettes spoil boys for my business."

Recently the Consolidated Wagon and Machine Company of Salt Lake City, offered a practical course of training in salesmanship and business. Evidently the object of the course was to encourage intelligent salesmanship and business management. No fees were connected with it; in fact each student enrolled was given an allowance of twenty dollars per month, and was promised a position with regular salary upon completion of the course with a required degree of proficiency. Admission requirements were simple: any young man of good moral character, *not a user of tobacco*, and reasonably intelligent being eligible.

An authenticated incident in connection with this matter shows the attitude of the average cigarette smoker toward such opportunities. The father of a boy of twenty-two years was explaining to a friend that his son had experienced considerable difficulty in securing steady employment. He had recently worked at several places but for various reasons the work had not been continuous. It was explained that the boy was willing to work, but somehow he was unable to obtain anything permanent. The friend asked the father if he had seen the announcement of the Consolidated Wagon and Machine Company, and at the same time handed him a small pamphlet outlining the courses and entrance requirements. The father had not seen

it; he was delighted. It was just exactly what his son had been looking for. The father took it home and discussed the matter with the mother and the son. They all agreed that the boy's opportunity had at last arrived, but when the clause prohibiting the use of tobacco was read the son demurred. The work to him did not look so attractive after all, in fact it was really not just what he wanted. In spite of the parents' efforts, the boy again drifted up town looking for a job where the requirements were not so rigid and the work more congenial.

BANKERS.—The banking business is of such a nature that it quickly tests the qualities of efficiency and general reliability. A man irregular in habits, unreliable and unsteady of nerve is most certainly not fitted for banking. The banker must possess a cool head, a steady nerve, unwavering accuracy and absolute reliability. Cigarette smoking, and for that matter any other form of tobacco usage, is not conducive to such qualities. Following are a few of many statements coming from various parts of the country:

E. C. McDougal, President Bank of Buffalo:

"I have always deprecated cigarette smoking. We always try to pick boys who do not smoke, and, were it feasible, we would make an absolute rule that no man could smoke cigarettes and remain in our employ.
* * * I have no doubt that if one hundred young men who do not smoke cigarettes, and one hundred young men who do smoke cigarettes, each one hundred of the same original average honesty, were closely observed, it would be discovered that the average stand-

ard of the one hundred who smoke cigarettes would be found very much deteriorated."

A. V. Hunter, President Carbonate National Bank, Leadville, Colorado:

"I feel very strongly on the subject of the use of cigarettes, or for that matter, tobacco in any form, by boys, and believe that it has a very injurious effect not only upon the health and growth but also upon the morals and character, by leading them into bad company and pernicious and vicious habits, and I would not care to employ boys or young men with the cigarette habit."

W. P. Sanford, President Holland Banking Company, Springfield, Missouri:

"I am fully aware that it (the cigarette habit) is doing a great deal to corrupt and wreck a great many of the youth of our country. Through a term of thirty-five years our bank has never employed a young man addicted to the use of liquor or tobacco to excess, and most of the employees during that time have been total abstainers. We have never been unfortunate enough to number among our employees what would be termed a cigarette fiend."

John J. Large, Vice-President First National Bank, Sioux City, Iowa:

"I certainly would not have a man working for me who was a persistent smoker of cigarettes. My opinion is that when a young man gets that habit fastened onto him in such a manner that it has a real hold on him, that is just about all he is good for the bulk of the time. It is not only a habit that seems to me is a very

disagreeable one for the people around the smokers, but certainly produces nervous trouble and lack of attention to business, which no business house can afford to tolerate."

Ralph Van Vechten, Vice-President Continental and Commercial National Bank, Chicago, Illinois:

"I have been a close observer of the effects of tobacco upon boys and young men. Aside from violating the laws of health, I find that it breeds selfishness and disregard for the rights of others, and in some cases, it brings on a taste for strong drink. Cigarette smoking on the part of boys is demoralizing, and, from my observation, it has a tendency to dwarf their mentality and to bring out the worst that is in them."

J. M. Munheim, Vice-President Miners and Merchants Bank, Bisbee, Arizona:

"My experience as a banker, which has given me many opportunities of coming in contact with boys and young men in a business way, has proven to me that those addicted to the cigarette or tobacco habit are to a great extent less conservative in their business affairs than those which have not acquired the habit, and in employing young men in our institution, one who abstains from the use of tobacco is far more preferable and is usually favored with the position, as it is my own honest conviction that a young man's brains are more or less inactive when constantly indulged in the use of cigarettes. Being the father of four boys, it will be my most earnest aim to have them refrain from the use of cigarettes in so far as it lies within my power to prevent."

Emory W. Clark, President First and Old Detroit National Bank, Detroit, Michigan:

"There is no question but that the habitual use of cigarettes contributes largely to the dishonesty and general inefficiency that one finds altogether too frequently among boys and young men. If the sale of cigarettes in this country could be prohibited entirely, it is not too much to say that it would add millions of dollars to the accumulated wealth in a very few years."

Lewis S. Hills, late President Deseret National Bank, Salt Lake City, Utah:

"I have had considerable experience in employing bookkeepers and accountants, and never saw one who habitually used cigarettes that could be relied upon; and if I found anyone in my employ had contracted the habit I always took the first opportunity to replace him by a non-smoker."

The present writer has before him statements from scores of railroad companies, large mercantile and manufacturing establishments, banking institutions and others who discriminate against the tobacco user in selecting employees. Not one of these statements contains a single word of praise for the cigarette habit, but, on the other hand, every one of them condemns it. Doubtless the list could be very greatly enlarged, for the number of testimonials obtainable seems to be limited only by the efforts put forth to secure them.

The day of the cigarette user in the more enterprising and progressive institutions is now practically past. Many institutions are prohibiting the use of to-

bacco in any and every form, and undoubtedly others will find it imperative to follow.

The tobacco habit will die hard, even in institutions of the better sort, for, it should be admitted, some strong, robust men seemingly suffer but little from its effects, and to such the doctrine of abstinence may continue to have but little meaning. Furthermore, mere gratification of appetite will permit men to continue the use of tobacco even after its effects are understood and experienced. But finally the whole commercial world will abandon it, if for no other reason than that it hurts business.

XII

SOCIAL ASPECTS OF THE TOBACCO HABIT

The reason that practically all tobacco users permit themselves flagrantly to disregard many of the fundamental standards of social conduct appears to be traceable largely to physiological changes induced by participation. Nicotine is a narcotic drug, the chief action of which is to reduce both mental and physical activity. While it impairs numerous organs of the body, it seems to strike particularly at the user's manhood through his nervous system.

No one will doubt that something radical has taken place upon comparing the social habits of a man before and after he acquires the habit. Men, who, before learning to smoke, are highly considerate of the comfort of others, very commonly become inconsiderate and even selfish after its use is begun. Men, who would never have once permitted their bodies to become scented with foul odors, afterwards, without excuse, or, what is worse, seemingly without caring, enter the most delicate society with their bodies and clothing reeking with the fumes of tobacco. Many men, who would have willingly sacrificed their own pleasure for that of others, afterwards complacently smoke in the presence of those to whom they know that the habit is at least displeasing and perhaps even sickening.

Tobacco adherents will probably protest against

the last statement and call attention to the prevailing practice among the better class of smokers of inquiring of others present whether the habit is offensive. But while it is true that this practice is somewhat generally followed, it is also true that smokers invariably expect a negative answer, and are commonly much offended if an objection is raised. In fact they are not only offended, but they feel that their personal rights have been curtailed. During an experience of many years the writer has never, except in one case, replied that smoking was offensive to him, without plainly disappointing the one who asked. The exception was the case of a college graduate who had formerly done work under the writer's tuition.

Then there is another class of smokers who indulge in all places and at all times unless positively prohibited. They can be seen in the street car, on railway trains, in public dining rooms, and in scores of other places. They never seem to think of the rights of others.

Then there are still others who positively take delight in making it unpleasant for non-smokers about them, and unfortunately this class is altogether too large. Inveterate smokers commonly look upon abstainers as "tenderfoots" and "sissies." A railroad conductor recently showed his contempt for a passenger who preferred standing in a chair car to sitting in a smoker. Smokers of this class, and they are not a few, frequently go out of their way to make it unpleasant for others. It certainly cannot be denied that every human being should be able to breathe the unpolluted air of nature.

The smokers' lack of social sense is perhaps seen at its highest in their attitude toward women and children. Women naturally are far more refined and sensitive than men, but to many smokers this makes but little difference. They indulge their appetites in the presence of women whenever they choose, even in the sanctuary of the home. It is difficult to understand how a man can expect his delicate wife and children to greet him with open arms, when he goes home to them befouled with offensive fumes. It is by no means uncommon to see a father blow the poisonous smoke from a lighted cigar or cigarette into the face of his tender infant. Conditions of this kind force upon one the conviction that tobacco positively destroys the finer senses of right and wrong.

A short time ago a smoker was observed to spend less than two hours with his wife out of a fifteen-hour train ride. The remaining time was passed in a nearby stuffy smoking compartment. Tobacco users will sacrifice almost anything for their habit. If regulations will not permit them to indulge in the presence of their wives and children, they will go almost any place to satisfy their appetites. A man who ranks high in social affairs was recently observed to go into a stuffy foul-smelling car carrying a load of South-European immigrants, because the train facilities would not permit him to smoke elsewhere.

All of the better railroad trains are now equipped with observation cars especially designed for the convenience of long-distance travelers, but unfortunately these conveniences are commonly monopolized by

smokers. Women who venture into such places seldom stay but a short time, and then pay for the visit with headache for the remainder of the day. More commonly, however, the women passengers remain in the car seats, while the selfish, perhaps thoughtless, smokers are befouling the best part of the train. This condition is not natural to American manhood. A smoker cannot be his real self, and thus disregard the rights of others who are paying the same for accommodations as is he.

This disregard for others seems to have invaded every phase of human activity. One would be less surprised if it were confined to certain quarters, especially where culture is more or less unknown. But it seems to have reached the rich and the poor, the cultured and the uncultured alike. A physician, who was graduated from an accredited school, was called from his bed at midnight to reduce a fracture in a child's arm. The party had traveled far overland and were fatigued and nervous. The physician placed the child upon the table, lighted a cigar and proceeded with the work. This matter to smokers may seem trivial, but non-smokers cannot understand how a physician can so far forget himself in the presence of a mother already weary, tired and sick.

A college football team was just finishing a most brilliant season. The boys had trained well and worked hard. It was their boast that the rules with respect to diet and habits had been strictly observed. None of the boys had used tobacco since the training season began, and most of them never had. The last game was

being played. At the beginning of the second half the player at the left end was replaced by another. The training season for him was now technically over, and he could eat and otherwise do as he chose. To the surprise and chagrin of hundreds of students and professors he took from his coat, which lay on the sidelines, a huge cigar and began to smoke. His inveterate appetite and lack of self-control would not permit him to wait until he had gotten off the campus. With an unpurverted appetite this student could never thus have offended his coach and school. He plainly demonstrated that he had refrained from the use of this narcotic wholly because of athletic regulations. Just as soon as he was left to himself he rushed back to his habit.

Non-smokers are at a decided disadvantage in many social affairs. They must either remain away or suffer the inconvenience of smoke-filled rooms, and subsequent headaches. An alumnus of one of America's great universities recently attended the banquet of a local chapter. The fellow alumnus at his right smoked fourteen cigarettes during the progress of the supper and the one at his left twelve. Physicians and others who had learned well the scientific aspects of proper ventilation sat there completely oblivious to the fact that the air was literally blue with cigarette fumes. There is sufficient carbon dioxide and carbon monoxide alone in a room of that kind, without mentioning the other poisonous products, to produce a racking headache in any healthy man on earth. Non-smokers who

will not attend such functions are regarded as lacking loyalty to their Alma Mater.

It is possibly very difficult for the average smoker, who is more or less constantly enshrouded in a nicotine-ized atmosphere, to comprehend the discomforts which he is actually inflicting upon others. But it is equally manifest that the slightest reflection upon his part would convince him that he has no right whatsoever to cause others the slightest degree of discomfort. He pays no more for his accommodations than do others, but everywhere, in hotels, on trains and on steamships he is provided with special accommodations. If the practice of smoking were abandoned the cost of accommodations at all public places and in all public conveyances could be very greatly reduced. The smoker seems to forget that under the present uniform system of expense, the non-smoker is actually paying for half of the additional "conveniences". He is not even content to remain in the quarters thus gratuitously provided for him, but he selfishly invades any and all other places, as for instance in sleeping cars where the odor from his tobacco penetrates every berth and compartment.

The average smoker is slow to realize that he is in reality a public charge. At the hotel or on the train he seems to forget that the cost of the accommodations especially provided for him is borne equally by everyone present. Moreover, he positively regards himself as a creature of special privilege, and is ordinarily much offended whenever it is suggested that his practices are distasteful to others.

In many respects the social aspects of the tobacco problem are even more serious than that of the liquor problem. If an individual wishes to use liquor to excess he is locked up away from the public. Not so, however, in the case of the tobacco user. He may smoke almost anywhere and as much as he chooses. Men would not be permitted to drink alcoholic liquors openly upon the streets of any city in America, while as a matter of fact the mere act of drinking is not nearly so offensive as that of smoking. The odor of alcoholic liquors and the foul breath of drunkards are not offensive to the habitues of saloons..

When the situation is finally analyzed and fairly adjusted, the smoker will have to stand the expense of all special conveniences provided for him. He will be permitted to indulge in places only where no offense can come to others, for it will be remembered that even money cannot buy the rights of free citizens.

XIII

THE COST OF TOBACCO.

Mr. Frank Fayant, author of "Fools and Their Money", recently wrote of the tobacco habit:

"The cigar money of the man of the family is overlooked by the sociologists who make elaborate studies of the cost of living, but it is a huge item, nearly half a billion dollars for more than eight billion cigars. In very recent years the cigarette bill has grown rapidly. We are now consuming five times as many cigarettes as ten or fifteen years ago, when the Tobacco Trust began spending millions of dollars pushing the trade by broadcast advertising in newspapers and magazines, and on bill boards and blank walls. Only ten years ago we smoked three billion cigarettes a year. Now we smoke close to twelve billions. Cigarettes are not taking the place of the cigar and the pipe; they are merely increasing by so much the consumption of the weed. For smoking and chewing tobacco we spend only one-third as much as for cigars, but the yearly bill is as big as the government appropriation for pensions. Nothing is of more interest in the tobacco statistics than the growing consumption of snuff, an article which most people imagine is only to be found in historical novels along with cocked hats and silk breeches. Snuff is never advertised, and is seldom displayed for sale by tobacconists, but the consumption has doubled in the past few years, and now reaches thirty million pounds

a year. Tobacco manufacturing and retailing have yielded enormous profits to capital. The rise of the American Tobacco Company is a romance in finance. The investment of a comparatively small capital, first in the manufacture of cigarettes and later in smoking and chewing tobacco and snuff, made many millions for the promoters. So rapid was the rise of the company and so enormous its profits, that the government stepped in to check the monopoly. But though the trust is legally dissolved, the separated companies are going right ahead piling up rich profits. The tobacco trade grows faster than the population. It has besides the great advantage over most other manufacturing businesses that the profits amount up season after season in good times and bad. When times are bad, people buy fewer clothes and cheaper food; they suspend building operations; they lay aside plans for the opening of new factories. The wheels of industry run slowly and manufacturing profits dwindle; but men still use tobacco. In fact, idleness among working men increases the consumption of tobacco. When the wage earner is working full time in factory or shop he has little time for smoking; when he is out of a job he has the whole day for his pipe, and he will scrape up enough pennies, even in the hardest times, to keep his tobacco pouch full. Of one brand of five-cents-a-bag smoking tobacco, largely used by workingmen, the sales last year amounted to eighteen million dollars."

CASH PAID IN EXCHANGE.—The vast importance of the tobacco business in the United States is shown by the fact that it ranks about tenth among our national

industries. The annual output of manufactured tobacco *at the factories* reaches the enormous value of \$500,000,000. These figures give no adequate idea of the amount actually paid for it by the consumers, as to this must be added cost of transportation, storage, advertising, middlemen's profit, overhead expense, and scores of other features incident to the business. The millions spent for foreign tobacco must also be added.

Statistics of the exact number of pounds grown and manufactured are not difficult to obtain, but the price actually paid for the finished articles constitutes quite a different matter. The annual farm value of tobacco-leaf reaches practically \$125,000,000, a figure increased four times after the material has been manufactured. Various estimates of careful statisticians have placed the amounts actually spent by the people of the United States between \$800,000,000 and \$1,200,000,000. Professor Henry W. Farnum of the department of economics, Yale University, favors the latter amount, and states that two independent calculations brought him to the same figure. A billion dollar annual tobacco bill, therefore, may be regarded as a conservative estimate. Even this amount does not include the enormous sums paid out for the great variety of accessories to smoking, such as pipes, matches, cuspidors, and the many devices for holding tobacco. The cost of pipes alone reaches nearly two million dollars per year. If this and the other items were added, the final total would without doubt reach close to the one and one half billion dollar mark.

A tax of a billion dollars per year may mean more

by comparison. Tobacco users of the United States spend twice as much as that paid out for railroad travel, and one and one-half times as much as the cost of maintaining our national government.

Our public school system, with its nineteen million pupils and five hundred thousand teachers, costs the people less than one-half as much as tobacco.

Three Panama canals could be built each year on the amount annually expended for tobacco.

Ten times as many universities as now exist in the United States could be maintained by this vast tax.

If this amount were converted into silver dollars and each placed edge to edge it would form a belt large enough completely to engirdle the earth at its largest diameter.

It would construct a substantial church building every fifteen minutes, or 700 such buildings in every state of the Union annually.

It would yearly build homes for 200,000 widows and provide sufficient funds for their perpetual upkeep. This is equivalent to 4,000 such homes in every state annually.

It would pay the traveling expenses and general maintenance of one million Christian missionaries.

LOSSES THROUGH FIRE.—Unfortunately the total cost of the tobacco habit is by no means limited to the actual cash paid for tobacco, or to those who use it. The habit is directly responsible for the unnecessary destruction of millions of dollars worth of property annually, part of which must be sustained by the non-

user. Losses through fire constitutes one of the chief items chargeable to the tobacco habit. After careful analysis of the matter, authorities in New York and other eastern cities have decided that fifteen to twenty per cent of all destructive fires are caused by carelessness in smoking.

The great Equitable Building is said to have been destroyed because of the careless disposition of a match which had been used to light a cigar or cigarette. The Triangle shirtwaist fire, which caused the destruction of valuable property and sacrificed the lives of 140 workers, is attributed to the same cause. The capitol building at Albany suffered a loss of \$6,000,000 through a fire said to have been started by smokers. The number of lives lost in fires so started is of course impossible to obtain, but all authorities agree that it must be very large. The state of New York views the matter with such gravity that it has recently enacted a law against smoking in factories where inflammable material is used.

The use of tobacco is also responsible for a great many forest fires. The forester of Massachusetts places the responsibility for more such fires upon smokers than upon any other single agency. In Connecticut the state forester has ascertained that of 116 fires in 1912, 25 were due to smokers.

An exhaustive report made a few years ago by the United States Geological Survey places the annual loss and expense due to fires at \$456,000,000. The estimate of Fire Commissioner Johnson of New York City of the part played by smokers would accordingly place the

annual destruction of property due to the tobacco habit at practically \$100,000,000.

Neither is the responsibility of the smoker limited to the destruction of property and life. Because of this practice, all property owners are forced to share the additional cost of maintaining fire departments as well as other precautionary methods. The cost of fire insurance is likewise increased.

DIVERTING SOCIAL ACTIVITY.—Tobacco users very materially increase the cost of living by diverting social activity into lines of useless production. The producer of necessity furnishes whatever the consumer demands. The tobacco growers of this country would not plant nearly a million and one-half acres of our choicest land if there were no sale for the product. Tobacco users, therefore, are directly responsible for the diversion of this vast acreage into the production of a wholly unnecessary article. If the land thus pre-empted were not used for the growing of tobacco, it would be devoted to the cultivation of vegetables, to dairy farming, or to the production of other commodities, thus materially reducing the cost of staple articles of food. The matter more fully impresses one when it is borne in mind that the farm value of tobacco is fully one-fourth as great as that of all vegetables combined. Tobacco culture also greatly impoverishes the soil.

SPECIAL RAILROAD EQUIPMENT.—In the matter of railroad travel and other means of transportation, smokers impose an enormous expense upon the public. Although they are never charged additional fare, yet they are always provided with special conveniences.

Free smoking rooms and smoking cars invariably form a prominent feature in all steamship and railroad equipment. Even in local railroad travel, where one car is sufficient to carry all passengers, an additional one must be added for those who smoke. In Pullman and palace car service special provision is always made for the smoker, often very much to the inconvenience of other travelers. In fact the railroad company furnishes the smoker two seats (one in the Pullman and one in the parlor car) for the price of one. It is not an unusual occurrence to see a smoker remain away from his Pullman seat all day, yet it can be sold to no one else.

Even the observation cars, which were at one time provided for ordinary passengers, are now thrown open to smokers who compel others to remain out because of the noxious fumes they create. Sensitive women who purposely stay away from the parlor cars commonly suffer great inconvenience and often distress from the fumes rising in the nearby lounging rooms. The only place on the entire train not befouled by the smoker is the chair car, and this it is feared will pass soon. Even though transportation companies charge all passengers the same fare, they seem to have forgotten the rights of the non-smoker.

Competent authorities estimate that in the United States practically \$75,000,000 are invested in smoking cars alone, not including parlor cars and special equipment in other places. This is also exclusive of the smoking rooms at depots. In addition to paying the interest and depreciation on the capital thus invested, passengers must also pay the increased cost of haulage and operation.

Practically every luxury in the modern train, if not directly provided for the smoker's use, is subject to his disposal. The extra appointments must be paid for by the smoker and non-smoker alike. All the non-smoker obtains for his share in the expense is the inconvenience arising from the smoker's gratification.

SANITARY MAINTENANCE.—The tobacco habit adds greatly to the cost of keeping the world clean. Much of the unpleasant work of floor-washers, street cleaners, train porters, and even housewives arises directly from this source. Evidences of the use of tobacco may be seen in the humblest cabin and the stateliest mansion, the wayside inn and the cosmopolitan hotel, the country shop and the city department store, the dime restaurant and the fashionable eating house. Everywhere throughout the nation, the rich and the poor alike are providing means for taking care of the tobacco user's filth. While there are no data relating to even the approximate cost of this phase of our sanitary service, yet a casual observation in our streets, hotels, stores, banks, clubs, trains, depots, and other places of public resort will convince the most skeptical that in the aggregate it must be enormously large. The great army of men and women now required to clean up after the tobacco user could be diverted to profitable production were it not for this habit. Unfortunately the expense for all this is paid by the public at large.

SICKNESS AND PREMATURE DEATH.—The deleterious effects of tobacco upon health is an important item in the cost of the habit to the country. Medical authorities are practically unanimous in the opinion that the use of

tobacco by children is exceedingly detrimental to health and proper development. Cigarette-smoking boys are everywhere described as under-sized and undeveloped. Scientists have shown that among even practically mature men smokers grow much less rapidly than non-smokers. It has recently been shown that football players in American colleges and universities have nearly ten per cent smaller lung capacity than their non-smoking companions of the same age and weight. Medical experts recognize a long line of diseases arising from the use of tobacco, such as various nervous ailments, "smokers' heart", "smokers' cancer", indigestion, short wind, etc. Prominent physicians regard smokers' chances for recovery from serious disease or major operation as much less favorable than those of the non-smokers. Any estimate of the cost of tobacco to the country must take into consideration the ill-health, disease and early deaths its use entails.

REDUCED MENTAL EFFICIENCY. The tobacco bill must also take into account the reduced mental efficiency of those addicted to the habit. Educators, the world over, agree that low mentality is almost invariably coupled with the tobacco habit not only among grade and high school pupils but among college students. So fully has this matter been demonstrated that tobacco defenders themselves seldom question it. Recent investigators at Clark College, Columbia University, the University of Utah and elsewhere have shown that the final grades received by smokers average fully five to ten per cent below those of the non-smokers. It has been shown at the University of Utah,

and elsewhere, that very large numbers of smokers fail to complete the work upon which they begin. Defenders of tobacco have quite generally argued that the low mental efficiency coupled with the use of tobacco is not caused by it, but Doctor Bush of the University of Vermont has demonstrated that tobacco is an *active* factor in the reduction of mental achievement. He has shown that even old smokers suffer ten per cent loss in mental activity after smoking for fifteen minutes.

The exact loss to the country arising from this reduced mental ability no one can even approximate. Even though the smokers were only five per cent less efficient than the non-smokers, the aggregate measured in dollars and cents would be enormously large. This is particularly true in view of the fact that successes and failures are being made today upon very small margins of superior or inferior mental attainments.

MAINTENANCE OF JUVENILE COURTS AND DETENTION HOMES.—Juvenile court judges and probation officers in every section of the country insist that the use of tobacco is one of the chief causes contributing to delinquency among boys of the adolescent period. In fact they assert that the yellow stain upon the finger tips brands practically every boy who appears before them. They are virtually a unit in the opinion that smoking breaks down the boy's moral fibre and reduces him to a cowardly shadow of his natural strength. They universally agree that such smokers in the main are unreliable, untruthful and dishonest, and that straightforward frankness is seldom found

among them. Cigarette smoking is known to produce a deceitful cuteness among boys exceeded only by that of the dope fiend. The apparent plausibility of the smoker's explanations is one of the first evidences seized upon by the experienced officer in working out the boy's guilt.

The harm thus accomplished by cigarettes by no means terminates here. Officers and physicians who have made a careful study of the matter agree that even though the use of tobacco does not itself directly predispose to the drink habit and associated vices, yet it so softens the boy's resistance that he readily falls prey to their temptations. Thus the result is the same; cigarettes first and alcohol later. No less an authority than Charles B. Towns reports that out of six to seven thousand cases of alcoholism and morphinism in men he has never found a single case which did not have a history of excessive tobacco use. The same authority adds: "I consider that cigarette smoking is the greatest vice devastating humanity today, because it is doing more than any other vice to deteriorate the race."

The anguish forced upon mothers and fathers by the waywardness of their boys is of course impossible to measure in terms of dollars and cents. Thousands upon thousands of parents suffer indescribable pain and humility because of the incorrigibility of their sons, and almost as a unit they date the beginning of this dishonor from the smoking of the first cigarette. Tobacco so breaks down the boy's moral fibre that he quickly becomes irritable, selfish and soon disrespectful, even to his mother. The use of tobacco is without

question one of the chief causes of alienating great armies of boys and later young men from the confidence and lives of their parents.

The State also suffers because of the use of tobacco among boys. Practically every boy who appears before the Juvenile Court officers is addicted to the habit, and likewise practically every boy who is committed to a home of correction. While the use of tobacco is evidently but one of several contributing causes, and in some cases may be wholly incidental, yet it is a well known fact among superintendents of detention homes that tobacco destroys the boy's resistance to temptation and, in consequence, is regarded as one of the chief factors of his downfall. The item chargeable to tobacco in the maintenance of Juvenile Courts and Detention Homes must in the aggregate be enormously large.

REDUCED PHYSICAL EFFICIENCY.—The loss of time occasioned by the use of tobacco is vastly greater than at first might be supposed. Time is required not only for the preparation and consumption of the tobacco, but also for the depressant effects to disappear. Among workingmen this item has become so serious that many employers absolutely prohibit smoking during working hours. Employers who are quite willing that their men should take occasional rests are not willing that time should be wasted in the preparation and use of a substance which further reduces their capacity. Recent investigations into various industries involving skilled and unskilled labor have resulted in a rather widespread conviction that smokers are much less efficient than non-smokers; that is, they do less work in

the same time. One large quarrying and stone-dressing company has recently learned that cigarette-smokers while on shift employ twenty per cent of their time in rolling and consuming cigarettes.

Among brain workers there are in the main two types of smokers, those who cannot work while smoking, and those who cannot work without smoking. In the first case the depressant action of nicotine not only reduces mental activity but the desire for activity. Men, who, before smoking, are active and ambitious become comparatively passive and indifferent almost immediately upon beginning to smoke. As a matter of fact one of the chief claims made for tobacco is that it soothes and passifies: "It dispels fears and destroys cares." The quiet curl of tobacco smoke is described as a "healing balm to troubled souls". That tobacco makes good this claim there can be no question in the minds of those who attend committee meetings and luncheons where tobacco is excessively used. Business which should be finished in minutes often requires hours, and programs which are designed to be serious often become little short of ridiculous.

Rest obtained through the use of a narcotic under normal conditions of health is not beneficial. A tired nervous system, when quieted by nicotine, commonly becomes still more irritable after the effects of the narcotic have passed, hence the usual practice of following one smoke almost immediately by another. The supposed rest obtained during smoking is largely imaginary. Ordinary fatigue cannot be overcome by rendering the nervous system insensible. Smokers

may feel that they return to their work refreshed, but as a matter of fact they quickly become more tired and irritable than before. The point here is that smoking should not be regarded as a recreative pastime.

In the second case the excessive use of tobacco long continued commonly impairs the nervous system to such an extent that it cannot be brought down to serious tasks unless first narcotized. This condition is exemplified by smokers who cannot work without smoking, and who smoke faster as they work the harder. Such individuals are usually irritable, cross and inefficient when deprived of their tobacco.

In both of these cases the habit is directly responsible for loss of time. In one instance it reduces the smoker's ability while he is using it, and in the other it reduces his ability even while he is without it. In no case has anyone seriously maintained that tobacco actually increases mental activity. It is in every sense a depressant and irritant. If the time lost by smokers, both laborers and those engaged in the more intellectual pursuits, was calculated in terms of dollars and cents the total sum would undoubtedly be far in excess of the enormous amount actually paid out for tobacco.

Smoking and the highest degree of manual skill are coming to be regarded by many manufacturers and scientists as incompatible, in much the same sense that tobacco and high scholarship do not go hand in hand. For various well founded reasons the use of this substance is now looked upon as particularly destructive of the finer senses of discrimination, both

mental and physical, a condition which seems to apply with unusual emphasis to the use of cigarettes.

The attitude of Thomas A. Edison, the greatest commercial electrician the world has ever known, may be regarded as indicative of the trend of others in this matter. Many years of experience have forced upon him the conclusion that men who smoke cigarettes are not up to the standard of average efficiency. It is reported that some time ago he found a partially used package of cigarettes near the door of his office, and that he immediately nailed it to the wall along with the following note: "Some degenerate retrograding toward the lower animal has lost his packet. He may have the same by calling upon the storekeeper." His estimate of the ruinous effects of this form of tobacco he tersely expresses thus: "The smoking of cigarettes is one of the worst, most offensive and harmful habits acquired by man. It ought to be against the law to smoke or sell them. They go well together—cigarettes and alcohol—and they accomplish wonders in reducing man to a vicious animal."

The widespread feeling opposed to the employment of cigarette smokers, especially boys, has recently extended into nearly every branch of commercialism. The opposition of employers to this practice is by no means based upon sentimentality, but largely upon dollars and cents. Employers in every section of the country have borne testimony to the fact that cigarette-smokers are far less efficient than non-smokers. Many of them, like the Cadillac Motor Car Company, are encouraging smokers already in their employ to abandon the habit

and are refusing to hire others who are addicted to it.

Just how much money is annually being lost throughout the country because of the reduced efficiency of smokers cannot, of course, be safely estimated, but that it aggregates an enormous sum is borne out by the fact that the commercial world is taking a decided stand to avoid it.

The actual cost, therefore, of tobacco to the people of the United States is by no means measurable in dollars and cents. Aside from the one billion dollars or more actually paid in exchange for tobacco, it has been shown that other enormous losses come through fires caused by smokers, through diverting social activity into lines of useless production, through providing special railroad equipment, through impaired health and increased disease, through reduced mental efficiency, through the maintenance of Juvenile Courts and detention homes, through loss of time incident to the rolling of cigarettes and filling of pipes, and through actual reduction of ability mental and physical. It would appear that the great scientist was not far from right when he declared that tobacco is one of the most devastating agencies of the age. It certainly is one of the most expensive.

XIV

TOBACCO ESPECIALLY HARMFUL TO BOYS

Tobacco is especially harmful to boys chiefly because of two conditions: first, boys use only cigarettes—everywhere regarded as the most dangerous form in which tobacco is manufactured—, and, second, their bodies are in an immature, transitory stage of development.

Without doubt, men's bodies are much slower in throwing out danger alarms than are boys', but *this is due to greater resistance, and not to greater freedom from attacks*. Boys change into men between the years of twelve and eighteen, and even at the latter age are often quite immature. It is during this time that the cigarette habit is commonly acquired. Some, of course, learn it earlier and some later. Throughout this transitory period practically every organ in the body undergoes development and readjustment. Evidently such a body is not prepared to combat an enemy with anything like as much success as it could in later life. The absence of a well-defined sympathetic interaction of the various organs permits of a more ready ingress of disease, as is shown in the higher death rate of this period. The man is by no means simply an enlarged boy, but a new individual, with new body and new ways of thinking and acting.

Unfortunately the cigarette habit attacks the boy at a time when he is least of all prepared to meet it. His

various organs are not in complete sympathy one with another, and his reserves are but poorly organized. The attack of cigarettes upon such a body, however, is no more intense than upon the body of a mature man, but the defense is much weaker and the results correspondingly more disastrous.

Then again, the influence of tobacco at this time of the boy's life is particularly serious, because of the narcotic effect coming when otherwise both his body and mind are in a state of constant activity. Activity on the part of the youth is absolutely essential to development. The depressing effect of tobacco ties him body and limb just as effectively as do strong cords. No cigarette-smoking boy desires mental or physical activity, in fact he is practically incapacitated for either. It would be almost as disappointing to expect an inveterate smoker of cigarettes to develop into a strong intelligent man, as it would a baby, tied to its crib with cords and straps. Tobacco strikes at the foundation of proper development by fostering desire for inactivity and idleness.

The following quotations concerning the effect of tobacco upon boys leave no room for doubt as to the widespread nature of the calamity. The statements, it will be observed, come from nearly every section of the country, and if necessary every city and hamlet in the United States could be represented.

L. H. Jones, Superintendent of Public Instruction, Cleveland, Ohio:

"The use of tobacco by children is very seriously bad, physically and mentally. The tendency is to pre-

vent development of the muscles and bones and nerves. The cigarette smoker becomes restless, unable to concentrate his attention, and he soon loses interest in the work of the school, because he is unable to so master the work as to secure any interest from it. Besides this, the company into which the practice of smoking leads him is of such a character as to change his interests from those of pure, moral, upright childhood into the low, coarse, and debased ideals of the street life."

D. C. Hull, Superintendent of Public Schools, Meridian, Miss.:

"This confirmed and inveterate use of tobacco, according to my observation and experience with boys, especially when the habit of inhaling smoke is indulged, invariably destroys physical stamina, weakens intellectual power, and lowers moral standards. The usual result is failure in studies and discontinuance from school."

R. H. Webster, Superintendent of Public Instruction, San Francisco, Cal.:

"It is a well established fact that the deleterious effects of cigarette smoking manifest themselves most promptly in the growing youth, by stunting growth, impairing nerves, dulling the intellect and moral sense."

Fred M. Hunter, Superintendent of Schools, Lincoln, Nebraska:

"In my opinion the cigarette habit is the worst practice widely prevalent among growing boys. It contributes in a very large degree to the mental, moral and physical lapses so prevalent among boys of school age."

Geo. F. Downer, Superintendent of Public Schools, Butte, Montana:

"I have no hesitation in saying that the influence of cigarette smoking upon pupils in the grades and high school, so far as my observations go, is never other than thoroughly bad. In an experience of nearly twenty years in school work, I have never, so far as my recollection goes, known an habitual cigarette smoker who was a *good* student. In this city, cigarette smoking is in every respect our greatest difficulty in getting satisfactory work from pupils, and I must confess that I cannot say we are very successful in combating the evil. I have always been in close touch with students, in my schools through their athletics and other student interests, and know whereof I speak when I say that the cigarette is invariably detrimental to the mental, moral and physical welfare of pupils who use it."

Mary Harlow, Principal of the Louisville Public Schools, Louisville, Kentucky:

"One of the greatest evils we had to combat was the cigarette habit. We have every evidence that the growth of both mind and body is seriously impaired by this narcotic. The boys do not smoke around school, but I fear that in the homes it is regarded by the parents as a necessary evil. It is a menace worthy of serious attention, for much of the delinquency and retardation can be traced to this source."

J. Arthur Baird, County Judge, Carthage, Illinois:

"I have been working with and among boys all my life and never have I seen one instance where tobacco

ever did him any good, and on the contrary I have seen hundreds of examples where tobacco has dwarfed growing boys physically and mentally and I know that the use of cigarettes has a very degrading tendency on boys and young men. My experience has been that this habit causes them to lower their ideals, lose respect for themselves, respect for their superiors and respect for the truth, and that users of such seem to lose all the higher senses of honor."

The relative influence of tobacco upon youths and grownups may be compared with that of a blight upon saplings and fully developed trees. The young tree when first planted consists commonly of a few limbs and about an equal number of roots. Under proper conditions of climate, soil and nourishment, such a tree year after year sends its roots farther into the ground and its branches farther into the air, until finally the roots develop into a complicated system drawing food from every particle of soil within rods around; the branches divide and subdivide in such a manner that an abundant foliage is produced to gather a counterbalancing nourishment from the air. At length the tree ceases to become appreciably larger, the roots stop their rapid development, and the foliage changes but little from year to year; this is the stage of maturity, a time at which the tree has reached its highest efficiency and possesses the greatest resistance.

During the period of development the roots and branches are under the necessity of supplying sufficient food for growth and for maintenance, but during the mature stage food for maintenance only is needed,

for the increase in size has naturally ceased. Young trees are capable of presenting but very little resistance to disease, while mature ones seemingly pass through attacks of equal severity without difficulty. A single season of drought is ordinarily sufficient to destroy every tree in a young orchard, while old ones may live on for years. The young tree has not established itself, and in consequence has no reserves upon which to draw in case of emergency. Even though the immature trees may chance to survive the attacks of blight and drought, they invariably carry the effects throughout the remaining part of their existence, the effect being commonly exhibited in stunted or assymetrical growth. At best they can never more than partially overcome the handicap and will always remain crippled. Orchardists have long since adopted the practice of replacing these stunted trees with younger and more perfect ones.

No one will argue that a tree, fully established and mature, is capable of passing unharmed through the repeated attacks of blight and drought, neither should it be argued that a mature man can live on unaffected by a drug such as nicotine, for he, like the tree, must finally yield under the weight of the additional load.

Young boys, like young trees, are particularly susceptible to the attacks of disease and malnutrition. The body itself, in addition to being unbalanced and assymetrical, is called upon to supply nourishment for a constantly enlarging body. In spite of the fact that every organ is rapidly undergoing change and that instability exists on every hand, the body as a whole

is insisting upon every organ working overtime to meet the demands of the bigger body. At such a time the accumulation of reserve materials is evidently neglected. The fires are burning brightly in the boxes, but there is no storage coal in the bunkers.

Under such conditions the administration of a drug not only reduces the working ability of every vital organ, but imposes upon them additional loads. Yet this is precisely what occurs in the smoking of cigarettes. Tobacco smoke not only attacks the lining of the mouth and throat, but the 2,000 square feet of lung surface. Aside, therefore, from inducing various nasal and throat disturbances, it greatly impairs the functions of respiration, resulting in a vitiated condition of the blood. Tobacco also has a marked effect upon the heart, causing palpitation, extraordinary irregularity, and weak and intermittent pulse. The extreme prevalence of "tobacco hearts" among cigarette smokers has received attention in another section. Tobacco attacks the stomach principally through the nicotine swallowed with the saliva and through the lack of proper circulation, resulting in dyspepsia and want of appetite. Nervousness follows the use of tobacco, a condition thought to be primarily due to lack of proper nutrition, and also to its direct effect upon the nerves themselves. In a word, tobacco prevents the normal activity of the mucous membrane, it injures the stomach, brain, heart, lungs, liver and it shatters the nervous system, thus over-working and impairing nearly every vital organ and function of the body.

It is no wonder, therefore, that the boy weakens and fails through the use of tobacco. He, like the young sapling, is attacked at a time not only when the various organs are immature, but when they are called upon to furnish nourishment for a constantly growing body. It would be no more impossible for a young tree to put forth a healthy growth of leaves and branches throughout a period of disease and drought, than it would be for a boy properly to develop while using cigarettes. Tobacco prevents proper development, and, perhaps what is worse, imposes injuries which are seldom removed, even after normal conditions are restored. Tobacco not only stunts the boy's body and mind but it perverts his whole moral being. Physical infirmities, mental deficiencies and moral delinquencies follow as natural corollaries of cigarette bondage.

There can be little doubt that the great tobacco companies understand this condition quite as fully as any one else. Certainly it is not by mere chance that the bulk of all advertising money is spent on cigarettes, rather on cigars or chewing tobacco. It is also a well-known fact that boys begin using tobacco with the cigarette, and it is equally true that the percentage of boys who discontinue the use of tobacco after once acquiring the habit is exceedingly small. All this is well understood, yet the great mass of American parents are passively permitting their boys to be poisoned right at a time when they are the most susceptible, and at a time when the injuries are such that they never can be overcome.

Americans resent the presence of predacious animals within their flocks and herds, of weevils in their hay, and smut in their grain, yet most of them are apparently willing that a far more serious peril should spring up and develop among their boys. The writer feels certain that within the next few years reforms will make it as difficult for boys and young men to obtain tobacco as it will be for them to obtain alcohol and opium.

XV

ACQUIRING THE HABIT

THE BOY.—Practically every boy who smokes began the habit clandestinely, a condition that would have been impossible if fathers had possessed the full confidence of their sons. Furthermore, it is the ordinary boy, and not the exceptional one who acquires the habit. He comes alike from the homes of the rich and the poor, the learned and the unlearned, the saint and the sinner, the lofty and the humble. He is the ordinary boy with the ordinary boy's aspirations and temptations. There are exceptions, of course, both better and worse, but this is the boy in which most interest should center, because he forms the bulk of boys.

To the ordinary boy the lure of adventure alone is often sufficiently strong to tempt him into the taking of his first cigarette, even though he may have been previously warned against it; with the untutored and untrained boy the habit is even more easily acquired. The curiosity aroused by the curling smoke and the sweetish odor of the cigarette is almost irresistible even to the average boy who knows better, and quite so to the one who has not been taught the necessity of resistance. This is all especially true if the cigarette is being smoked by an older boy who is regarded as the leader of the crowd.

Smoking is commonly acquired within the so-called

"hero-worshipping" stage, a period during which the boy's thoughts, ambitions and deeds are prompted almost exclusively by the daring and adventures of others. During this period he begins to feel the power of possibilities coming upon him, and he is willing to undertake almost anything for the sake of experience. He feasts upon the stories and adventures of others and longs for participation. His ideal is the hero who swings into prominence through a single act of courage. He longs for a following and to follow. He wants to do anything and everything. He must be active. He is impatient and cannot center himself upon any one thing for more than a short time. This is the usual, ordinary boy. One who does not possess some such qualities is sick and needs a physician.

No one should expect that this bundle of seemingly erratic impulses would conduct itself in the manner of man, or that it could be relied upon to do the same thing more than once in the same way. When temptation appears this boy is just about as likely to resist as to accede. If he is left alone, however, there is no question that he will soon lend ear to the voice of temptation. It is during this period that he commonly learns to smoke. He longs for experience which he sees others enjoying. He may remember some warning, relative to its evil effects, but that seems like a fancy in comparison with the pleasurable participation right before him. He witnesses the apparent enjoyment of smokers and feels that he is missing a large part of life's pleasures. He sees men smoking; he longs to be a man and feels that smoking would make

him manly. And so he smokes and has his experience of subsequent sickness. But to him the reward of this is that the following indulgences are attended by less severe disturbances, until finally he can smoke without being sick, which to him is an achievement becoming of manhood.

Then again he smokes because of the pleasure which clandestine indulgence brings to him. A smoke on the veranda, in the presence of father and mother, would be robbed of its chief charm, while one secretly indulged in behind the barn-yard fence or within the willow thicket is ideal. The pleasure of doing a thing without being "caught at it," is to him of the highest sort, and more particularly if he feels that he is under suspicion. Even older people are not wholly unacquainted with the lure of secrecy.

And still later the boy smokes because he enjoys being regarded as tough. After he has passed the stages of secret smoking he walks up and down the busiest thoroughfare, smoke in mouth and hat askew, with the hope of shocking his friends. He wants them to know that he smokes, and, further, that he is doing it in defiance of their non-approval.

He has long been told, at least by example, that while smoking may be bad for boys, it is harmless for men. He begins to look upon himself as a man, and feels that he has a right to wear (smoke) the distinction. He feels that he has escaped the evils of youthful indulgence and that he can now smoke with impunity. But long before this stage is reached the vicious tendrils of nicotine have worked their way so

thoroughly into his system that he has become enslaved to the habit. He smokes now not only because he likes it but because he cannot do without it. His experience has caused him to exchange positions with nicotine; once he was master and commanded; now he is servant and obeys.

Thus the normal boy, through yielding to temptation, is gradually and often quickly carried into a servitude from which release is seldom accomplished. In this connection one point at least is noteworthy: *The boy who acquires the habit does not do so because he is bad, but simply through yielding to the normal impulses for adventure peculiarly characteristic of this transitory period.* Any plan designed for the prevention or treatment of the cigarette habit among boys must use this fact as its groundwork.

ENCOURAGEMENT FROM GROWNUPS.—By no means the least important factor in starting boys upon their cigarette-smoking careers is the direct influence of certain grownups. Only in very exceptional cases, however, are adults ever known actually to advise boys to begin smoking. As a matter of fact, even the strongest advocates of tobacco, and those most debauched by it, regard such an action as little short of criminal. The laws of the state of Utah go so far as to declare that any act whatsoever on the part of an adult, leading directly to the use of tobacco by an individual under twenty-one years of age, is punishable as a misdemeanor, entailing either fine or imprisonment or both. The matter is regarded with such seriousness that even the purchasing of tobacco by a child for its

parent is prohibited by law. Strenuous efforts are everywhere being made to prevent grownups from thus directly contributing to the delinquency of minors. While of course infractions of this law are altogether too numerous, yet they sink into insignificance in comparison with the harm done in other ways.

The gravity of the whole situation is attested by the fact that smokers and non-smokers have united in the adoption of a great variety of means designed to prevent boys from smoking—that is forceful means. And herein lies a deplorable condition. Adults know that tobacco is injurious to boys, and have resorted to numerous schemes, chiefly compulsory, to keep it from them. Grownups have even made it a criminal offense for a boy to have tobacco in his possession. The intention without doubt is a commendable one. At the same time, adults know that tobacco is harmful to grownups, and they try to excuse their own use of it by telling the boys that age establishes a kind of immunity against it.

If there can be any question whatever in the mind of anyone as to the injury of tobacco to adults, an inquiry from an old smoker should settle the matter. Even the most robust individuals who have used tobacco for some time invariably admit that it has been injurious to them, and, furthermore, they advise younger men to abstain from it. Science has proven that tobacco is harmful both to old and young, although the evil effects may not be so pronounced in the former as in the latter.

The absurdity of the situation is revealed in the fact

that adults brand smoking among boys as not only harmful but *criminal*, while among themselves it is harmless and almost saintly. A cigarette-smoking boy when apprehended is promptly taken before the law, but in most cases, even a preacher may carry his lighted cigar to the very steps of his sanctuary and then be hailed as a servant of the great Master. To the average boy the whole affair is taken with about the same grace as are the statements of a bald-headed barber in trying to sell hair tonic. Smoking-parents may be able to deceive their children when quite immature, but the ordinary boy sees through his father's ruse long before the parent suspects it. He argues, and that correctly, that if the same kind of food and drink are good for both, then why not tobacco?

Grownups, in thus trying to deceive children, do an irreparable harm. Children become deceitful and untruthful, and in such they are but following the example of their elders. They lose confidence in their parents and no one can scarcely censure them for it. They look upon life as being made up of words and not of deeds, a condition in this respect which smoking-parents cannot deny. They learn the habit of smoking far more effectively than it could be taught in words, for after all, example is much stronger than precept. As proof of the effects of smoking-fathers upon their sons we need only observe that smoking is almost universally practiced by the boys in such families.

Boys naturally have an unlimited amount of confidence in their parents, and when that confidence is lost, it is largely lost in the rest of mankind. Parents cer-

tainly can never be successful with their children by being dishonest with them, for sooner or later they will be discovered. Open frankness and absolute truthfulness are winning virtues. If fathers have insufficient courage and self-control to overcome a habit that they know to be injurious to the human race, it would be far better for them to acknowledge their weakness than to attempt deceit. Any plan designed for the prevention of cigarette-smoking among boys must embody a factor for the correction of the influence now exerted by smoking grownups.

Dr. J. R. Leadsworth says of the encouragement given by fathers:

"Can it be supposed for a moment that in a home where tobacco fumes constantly permeate the rooms, such a powerful volatile poison would have no deleterious effect upon the mother and children who spend almost their entire time in such an atmosphere? Does it not seem reasonable that a child reared from the cradle under such conditions should present symptoms of nicotine poisoning even though it has never become a victim of the habit? But how few boys, when the husband and father is addicted to its use, escape the injurious habit? When we remember with what pride the boy looks upon his papa, and what interest he takes in a recital of the daily details of the parent's life—all of which proves to him that no other boy has such a father—it is reasonable to expect that he would be eager to follow his example even in this harmful practice. Too often the practice of smoking is taken up during the impressionable years

of childhood and youth, with the result that the brain faculties never fully develop."

Following the enactment of a stringent law dealing with the use of tobacco by minors, the public school teachers of California recently began a campaign against narcotics. By far the most serious difficulty encountered was the nearly universal practice of smoking by grownups. The following question was discussed at one of the institutes and later submitted by the State Superintendent to a number of California's most successful public school teachers:

"What's the use to tell the children about the effect of tobacco? We can talk to them all day and then go home at night to see the very people they think most of in all the world, smoking like a house afire. They see people hale and hearty who have been using tobacco every day for fifty or sixty years. They see the rich and prosperous enjoying it. They constantly see educated people, fashionable people, using the weed. What's the use after that for the school teacher to tell them that it is poisonous, that it stunts their growth, that it kills them off, and all that? We waste our time and get nowhere in that way."

Teachers from every part of the state voiced a strong protest against the deceiving and deterring attitude of smoking grownups. They agreed that the duty imposed upon them by law was thus made many times more difficult. Some few even felt that the task was an impossible one, but the great majority insisted that right is right and should be taught even in the face of smoking parents.

Mr. James E. Armstrong, President of the Board of Trustees, University of Illinois, voices the same protest from quite another section of the country :

"There are few cigarette smokers in the high school. Smokers usually fail to get through the grammar grades. Few ever graduate who smoke before they enter the high school. As a rule the smoker is dull and unable to concentrate his attention upon his work. It is difficult to arouse him to any degree of enthusiasm. So long as men indulge in smoking it will be hard to persuade the boys that they should shun it, and so long as boys continue to learn the habit there will be men to perpetuate it."

Parents and others who knowingly or otherwise teach children to smoke will get but little comfort from the following statement of Dr. Harvey W. Wiley, enumerating the various calamities accompanying the use of tobacco by children :

"You mothers, whose boys are just beginning at the age of ten to find opportunities to acquire the cigarette habit, what may you expect if they do? Here are a few of the possibilities :

"They will acquire a habit which may bring them into sympathetic associations with the boys who are going to the bad.

"They will be slaves to a habit which segregates them from the common crowd of travelers and spectators.

"They will join the procession that is made up of marchers with hesitating steps, shaky hands, and palpitating hearts.

"They will unfit themselves for athletic sports and high attainments in their studies.

"They will weaken their resistance to disease and fall easy victims to infection.

"They will exclude themselves from many activities leading to higher pay and preferment.

"They will waste large sums of money while doing themselves lasting, perhaps even fatal, injury.

"They will more readily become victims of alcohol, cocaine, opium, and other narcotic drugs.

"They will mar the efficiency of their work.

"They will shorten their lives.

"Their presence will disclose itself to the nostrils of all their associates."

TOBACCO ADVERTISING.—Along with the natural desire of children to imitate grownups, and the carelessness or willingness of grownups to provide unsavory examples, the American tobacco combination plays an important part in inducing boys and young men to acquire the habit. The history of the combination began in 1890 with the coalescence of several independent concerns. The profits were enormously large, so that by 1906 its aggregate capitalization including bonds reached \$450,395,890, and at the same time controlled practically 80% of the tobacco business of the country. In 1911 the combination was proceeded against under the Sherman Anti-trust act and later declared unlawful, so that at the present time it is doing business under various successor companies.

The profits and resources of the tobacco manufacturer's combination are such as to justify advertising al-

most unparalled in any other line of business. Billboards from one end of the country to the other are placarded with advertisements eulogizing the virtues of various brands. There is scarcely a street car in any city of the nation which does not display one or more cards advertising tobacco, and even some magazines fill their pages with showy announcements.

Apparently one of the most profitable sources of returns are the advertisements reproducing the statements and pictures of authors, singers, and even athletes, who bear testimony of the flavor and superiority of certain brands. It is a noteworthy fact, however, that no advertisement has yet been reported in which any individual ever extolled a tobacco *because of any service it renders*. In misleading advertisements this or that particular brand is commonly recommended because of the absence of "bite," the peculiar flavor, the pleasant feelings of rest following its use, etc., but no one seems to be able to mention any of its virtues or dares to mention any of its real effects.

The wonder really is not that so many boys learn to smoke, but that so few of them escape. A normal boy, with normal impulses, encouraged by habits of his father and goaded on by the enticing advertisements of tobacco companies, can scarcely be expected to do otherwise.

XVI

INFLUENCE OF SMOKING CLERGYMEN

Christian life should be characterized by progressive mastery of sin. A religion that does not imbue its adherents with a constant desire to overcome, is scarcely worth while. Mastery of self and the laws of nature, coupled with desire for the welfare of others, constitutes the goal toward which all Christian teachings should lead.

A religion that leads men to believe that appetites and practices acquired through wasteful indulgence, will at some future time automatically be removed, without any effort on the part of those enslaved, is going far beyond our experiences with natural law. Furthermore, it would invade the realms of justice to ask Deity to eradicate the effects of sin, brought on through self-gratification, without requiring the individual to assist in the process of restitution. Initial achievement, or achievement following sin, seems to be obtainable only through effort, while just as invariably retrogression follows inactivity.

True religion, therefore, should place the responsibility of overcoming upon the shoulders of the individual, aided of course by Divine power. It should encourage men to live lives of increasingly better deeds. It should emphasize the necessity of attention to minutest details. It should discourage the altogether too

popular attitude of hoping to swing into divine favor through the accomplishment of a single act of heroism. It should sear into the souls of men the great turth that "little foxes spoil the vines".

A religion, like a philosophy or a labor union, leading men to expect something for nothing is working along wrong lines. The laws of nature plainly teach that knowledge is not acquired except by proper mental attitude and then only by individual effort. While it is true that we may be assisted by others, yet intelligence can spring only from desire.

Vigilant, watchful progression, looking towards constant and eternal betterment, should be the foundation of Christian teachings. Mankind is made for mastery and not for servantry. Experience is daily demonstrating that the accumulating intelligence of ages is gradually equipping men with power to control the laws of the universe. Live philosophies are beginning to believe with the "Mormon" prophet that the glory of God is intelligence and that men are saved no faster than they gain knowledge.

The Christian teacher should not only be prepared in an intellectual way to lead others into the path of progression, but he should also be able to say, "Do as I do." His duty then is plainly two-fold: to *teach* others to overcome, and to *lead others to overcome*. If he insists upon teaching only by word, he can hope for but little success. Men may follow him because of his flattery and fluency, but he cannot convert them to the g enius of Christianity. The ideal of Christian teachers is he who said, "I am the way, walk ye in it."

Not until man is able to control himself, even under trying tests, is he yet a real man. Man, with an uncontrollable habit hanging over him, is no nearer being a free man than is the one who cannot meet his temporal obligations; both are servants of a master. The real joy that comes through overcoming, lifts one from the plane of bondage to that of freedom.

No Christian teacher can successfully urge others to overcome when he himself is bound. A converting, energizing talk never comes, except in rare cases, from the lips of one who himself is enslaved. Deity seems to have designed that the soul-inspiring talk of conversion shall not come from the mouth of the insincere. Teachers, therefore, should be leaders in both thought and deed.

Preachers whose lives are not exemplary, exert a deplorably unwholesome influence upon the public. In the first place they not only fail to stimulate, but they actually discourage. Among the less courageous ones of the community, their examples are unfortunately, and unjustifiably, often taken as an excuse for similar or even more serious weaknesses. No man of course is justified in doing wrong no matter whose example he is following. But it is none-the-less true that many go wrong because of the ill-advised acts of leaders.

These familiar truths are not directed at the Christian leader who is grossly and violently disregarding the ethical or moral codes, but at the one whose everyday practices do not conform to higher Christian standards. The average preacher does not seem to be aware

of the fact that communicants observe his habits in quite as much detail as does the child those of the grade teacher.

In the matter of the tobacco habit, no Christian leader has the right to indulge. His position makes him peculiarly subject to criticism and imitation. The entire community, both followers and opponents, expect him to lead an exemplary life. Boys are taught to pay him deference, and very early are influenced by his example. Those who do not support him magnify his faults because of his pretentious position, and those who do support him look upon him as living the higher life. His weaknesses, therefore, have a peculiar influence upon the whole community. With one class he becomes the subject of criticism and with the other one of emulation. Individuals occupying prominent positions exert a marked influence either for good or for bad, and often for both.

It is not difficult to forecast the success of the smoking preacher in his efforts to teach others the lesson of overcoming. A popular preacher in a western city recently opened quarters where individuals enslaved by the grosser habits might receive encouragement and be placed in proper mental attitude to overcome. The preacher's practice of appearing before these slightly more unfortunate victims, commonly with cigar in mouth and always with tobacco-befouled person, thus betraying his own slavery, was little short of a burlesque on reason and manhood.

There can be no question that a smoking preacher has a very detrimental effect upon all classes of boys.

One group follows his example and argues that certainly there can be no harm in doing what the anointed of Deity is doing. The other group, probably because of strong parental influence, refrains from the use of tobacco, and at the same time loses confidence in the man who should lead.

The height of impropriety was recently witnessed in a neighbor's house when a clergyman thought to encourage the friendship of a lad of five by permitting him to hold a burning match by means of which he lighted his cigar. Such an act is certainly without the merest vestige of justification, and is in every way subject to severest condemnation. And yet the attitude of this clergyman is probably only one step worse than that of other such men who light their own cigars and indulge in the presence of women and children.

No minister should argue himself into believing that boys can be deceived by the popular defense that tobacco is harmless to men and ruinous for boys. Even if this condition were true, the boy would not believe it, because of his inability to understand such a discrimination. That children are altogether wiser and more observant than regarded by grownups can easily be demonstrated by anyone who will recall his childhood experiences. The deterring influence of the smoking preacher, therefore, is at least two-fold: first in inducing others to smoke, and, second, in destroying the confidence of still others. The latter condition is probably even more serious than the first.

Just how a smoking preacher could induce himself to enter an anti-cigarette campaign among boys is dif-

difficult to understand, yet of all men, except perhaps the parents, the preacher should be the best prepared to lead any such movement. Boys would not believe him, and, furthermore, his knowledge of his own guilt and hypocrisy would preclude whole-hearted work. He is not only useless in such a campaign, but he constitutes an actual menace to the success of others.

An expounder of the word of God should be an example of self-control. The weight of his encouraging words to sin-stained souls is without doubt very materially decreased by the public knowledge that he himself is servant to an uncontrollable habit. The uppermost thought in the mind of the listener questions the sincerity of the preacher and asks why he himself has not first overcome. When a preacher tells of the saving grace of the Divine Spirit it is well to exhibit in his own life the fruits of that grace.

From quite another point of view preachers should be men of cleanly habits. Aside from the practice of confession, employed in some churches, ministers quite generally act as the confidants of their parishioners. Such men are by no means so uncommonly befouled with the odors of tobacco that delicate women sicken in their immediate presence. It is a travesty on Christianity and an imposition on manhood to expect communicants to seek advice from a filthy source. They would as soon believe that pure water can flow through stagnant pools as that the Spirit of God comes to them through such individuals. The statement is indeed a strong one, but no stronger than the actual repugnance which many non-smokers, both men and women, feel

in the presence of tobacco-befouled persons claiming to be the emissaries of Deity.

Then again, just how an unrepentant individual, either preacher or layman, can approach Deity for further light needs explanation. Among the first things demanded by the spirit of inspiration is bodily cleanliness, especially of those who ought to know. If we should doubt the demands of Deity in this regard, let us ask ourselves what we expect of Him. Do we not think of Him as being the very fountain of cleanliness? Then why should He not demand the same of us? The tobacco-befouled minister has yet to learn the meaning of repentance.

To the preacher, as to all else, the use of tobacco should be looked upon as an utterly useless habit, and, if for no other reason, should be abandoned. There are so many useful things to do that certainly men of God have no time for useless ones. No one will claim that tobacco serves a beneficial purpose in the life of any preacher. Then again the habit is expensive.

One of the commonest appeals of the average Christian teacher is for money with which to convert the heathen. The widow and wash-woman are encouraged to contribute their dimes with the belief that even this small amount in the hands of God may convert a soul. Children are persuaded to deposit their pennies and are told that in heaven they will be greeted with open arms as the saviors of human kind. The act of contributing mission money is pictured as one of the greatest sources of future human reward.

And all this may be true, but what of the average

smoking-preacher who emerges from the church door and lights a cigar purchased by the widow and wash-woman's contribution? He may try to hide behind the formality that his parent church allows him a certain percentage of the funds thus collected, or that he receives his entire salary from another source. The fact remains; however, that Christian ministers are maintained almost exclusively by contributions, among which are liberally scattered the widow's mite. We are constrained to believe that if the smoking-preacher were sincere in his usual statement that God requires our contributions for the conversion of unbelievers, he himself would abandon the tobacco habit, and invest its cost in human souls. His unwillingness to do so, forces upon one the conviction that he is either insincere or inordinately selfish.

Readers of course will apply this criticism only where it belongs. There are a great many splendid clergymen whose lives proclaim that they are sparing no effort to become true leaders of men. These men are clean, wholesome and upright, in whose presence others cannot go without being made better. Their worth to a community and to the world cannot be overestimated. They are the "salt of the earth", and their influence will go far towards leavening the whole lump.

But of the clergyman whose pretensions are equally as great, but whose life belies him, no one can speak in terms too severe. He poses as a light upon a hill, while in reality his life points to personal gratification. He proclaims the saving grace of Deity, yet he himself is not willing to overcome personal habits. He de-

nounces slavery to sin, and at the same time indulges in habits which lead others directly into it. He declares that the widow's mite should be contributed for the forwarding of the work of God and then spends it for cigars. Such as he would do well to turn the search-light of true repentance inward and not withdraw it until the lesson is learned that there is no place in the Kingdom of God for the insincere, or for those who by their acts knowingly lead others astray.

There certainly can be no excuse for Christian teachers not being familiar with the indictments which modern science has issued against the tobacco habit. But aside from the fact that the use of tobacco is an extravagant waste of money, that it lowers efficiency both mental and moral, that it is the most filthy habit indulged in by man, that it reduces morality and leads to more serious practices, that it encourages disease and untimely death, Christian leaders should avoid the habit if for no other reason than primarily because they propose being *free men*. Christian piety does not require long-faced sanctimony, but it does ask for leadership in all matters of personal and spiritual betterment.

XVII

CIGARETTES, AMBITION AND RELIABILITY

Two factors most fundamental in the development of true manhood are desire and dependability—ambition and reliability. The use of tobacco by boys and young men not uncommonly strikes a fatal blow at both of these basic qualities. A short time ago the present writer directed more than one thousand inquiries to bankers, merchants, manufacturers, educators, judges, etc., asking their opinions relative to the influence of tobacco upon growing boys. The replies constitute one mighty protest against this pernicious narcotic. Not a single individual voices a word in its favor. The composite verdict is to the effect that tobacco commonly substitutes laziness for ambition, independability for reliability and failure for success.

Tobacco is a narcotic and not a stimulant. It diminishes desire for activity and never increases it. It produces a feeling of both mental and physical restfulness and well-being. It causes a smoker to care but little for what is going on about him by abolishing ambition, anxiety and aspiration. It interferes with the natural activity of the heart, lungs, liver, and, in fact, every vital organ of the body. Its general effect is manifest in the case of smokers who ambitiously assign themselves to certain pieces of work, but who lose practically all desire immediately upon beginning to smoke.

That the use of tobacco by boys disposes to laziness

there can be no question. The habit almost invariably is acquired in private and cultivated during periods of indolence. No boy ever learned to use tobacco while performing the duties of honest toil. The habit is born, developed and matured in idleness. It is both the child and the parent of indolence. Instances are very rare of cigarette-smoking boys aspiring to athletic activities or appearing at public libraries. One prominent writer has said that there is no better safeguard for a boy against the habit than membership in a gymnasium or athletic association. Cigarettes and desire for physical activity are as far removed from one another as light and darkness or right and wrong. No poison can encourage life, nor a narcotic ambition.

One of the most pitiable features of this condition is that the inveterate cigarettist in most cases has but little desire or will power to regain his lost ambition. He will laugh at the advice of his best friends and ridicule the tears of his mother. He seems to be practically immune to stimulation. He makes promises freely, but never more than passingly intends to fulfill them. To himself he is the real acme of information, and, therefore, is not easily impressed with desire for improvement.

The cigarettist lives primarily for self. Cases are far from uncommon in which he has been known to steal from his widowed mother for the purpose of self-gratification. He indulges his depravity in the presence of his mother or sisters even though he knows that he is displeasing them. There is no better example of self-cultivated selfishness than the cigarettist.

Tobacco not only breaks down a boy's bodily vigor, but it destroys his sense of moral obligation to others. Employers all over the country are beginning to realize that even the prompt delivery of messages cannot be intrusted to a cigarette-smoking boy; he may leave the office with every intention of performing the work well, but the rolling of a cigarette on the way marks the burying place of that intention. While tobacco is injurious to boys in a score of ways, its destructive effect upon their ambition is indeed a most serious one. Boys naturally are active, alert and ambitious; repose, quiet and satisfaction are foreign to their make-up, yet this is precisely the condition induced by cigarette smoking. A drug which thus strikes at the very heart of a boy's future career is worse than murderous in its nature, for without ambition the boy were better not.

Following are a few opinions selected at random from several hundred now in the writer's files:

Superintendent Adams, of the Boy's Industrial School, Lancaster, Ohio, here points out the effect which cigarettes have upon body and mind:

"In this institution we have over a thousand boys, most of whom were cigarette smokers at the time they were committed here. I do not mean to say that they were committed for smoking cigarettes, but most of them had the habit. I believe that cigarettes are injurious in every way; they dwarf the body, dull the intellect and numb the sense of good morals. Boys having this habit do not seem to appreciate the difference between right and wrong. After these boys are committed here, and consequently have no further op-

portunity to smoke, they seem to take on a better moral tone. Cigarette smoking is indirectly responsible for a great deal of crime and the cause of a large number of boys being sent to this school."

In the following statement Judge George W. Stubbs of the Juvenile Court of Indianapolis, points out that cigarettes undermine the boy's moral sense of right and wrong and therefore predispose to crime:

"In the Juvenile Court I have found that manliness and good conduct can be aroused and stimulated in boys, no matter what the offense of which they have been guilty, if only they are not cigarette fiends. When a boy has become addicted to the use of cigarettes the disease is in his blood and brain; his moral fiber is gone; he becomes apathetic, listless and indifferent; his vitality has been sapped away and all the vigor that should characterize the normal boy is gone. We have found that we have but small chance to reform and help the cigarette fiend unless the habit can be broken. It is a fight with the boy's appetite which, like the burning thirst of the inebriate, rarely listens to moral suasion, and when a boy is in this condition he easily drifts into crime."

Dr. E. G. Gowans, now State Superintendent of Public Instruction in Utah, after several years' experience in connection with juvenile courts and industrial schools, recently said:

"Most of the boys who have come under my personal observation as cigarette smokers have manifested lack of moral fiber in a marked degree. It seems as though the cigarette and the weak will nearly always go to-

gether. Many of these boys can be convinced that the habit is injurious, and can be made to feel that they would like to overcome it, but they lack the will power and go down under the first temptation. Prevention is the thing that should be emphasized, and all teachers and parents should recognize the importance of it contrasted with curative work. As to the effect of the cigarette habit upon general delinquency, let me say that I feel sure that it is one of the most potent causes in its production. Weak willed boys without moral fiber easily learn the habit, and degenerate under its influence. Strong willed boys who begin more as an evidence of revolt against their parents than for any other reason, undergo the same sort of degeneration, and soon show the lack of moral tone, which is responsible for such delinquency, so that on the whole I would say that the effect of the cigarette habit among boys is to very materially increase the total amount of Juvenile delinquency."

The famous negro educator, Booker T. Washington, wrote the following strong indictment against tobacco only a few weeks before his death:

"At Tuskegee Institute we have had some interesting experiences with boys who smoke cigarettes. Every year, in the thousand or more young men assembled here, there are, of course, several who are addicted to this habit. Our experience is that it is generally the students who have the cigarette habit who give the most trouble with reference to discipline. Their will power is broken down, their moral sense is blunted, and it is very difficult to make anything out of them. They

will go to any length, take any sort of risk to get an opportunity to smoke a cigarette. In connection with our hospital, the boys addicted to the cigarette habit are given regular treatment for its cure. Such boys do not generally do well in their classes."

There can be no mistaking the attitude of Superintendent Bruce M. Watson of the Spokane Public Schools:

"Any question regarding the effect of cigarette smoking upon school children is almost like inquiring as to the desirability of an epidemic of scarlet fever in the schools. The bad effects of cigarette smoking, or, in fact, any kind of smoking, on a school boy are so well recognized and so obvious that it seems superfluous to mention them. The practice is bad from every point of view and one of the worst enemies of the mental and physical development and future success of our school boys."

Superintendent Amos Hiatt of the Des Moines Public School is convinced that cigarette smoking boys have but little power to do right or strength to overcome:

"The cigarette hinders the physical development of the boy so that he is dwarfed in body and strength and cannot hope to excel. The cigarette dwarfs the intellect so that the boy who becomes addicted to the use of cigarettes has but little chance for success. It is the unanimous report of the teachers of East Des Moines that the boy who uses cigarettes soon fails in his work and drops out of his class. The boys who are habitual cigarette smokers cannot do good work and but few go through school. The cigarette undermines the

moral forces. The boy who has formed the cigarette habit has but little power to do right. He cannot tell the truth or stand against evil forces. The cigarette weakens the will power so that the boy has but little strength to overcome these bad habits."

At first thought there may appear to be no connection between cigarette smoking and unreliability, but as a matter of fact the two are very closely related. It does not follow, of course, that all untruthful persons use tobacco, but it is true that the great majority of cigarette-smoking boys have but little regard for truth. The narcotic effect of tobacco deprives a boy of his normal desire for activity and reduces his moral sense of obligation to others. When in the service of others he can waste time, fail to accomplish set tasks, or to keep his promises, and then excuse himself with perfect propriety, and that too without the least censure of conscience.

And so a boy, whose moral sense of obligation to others is thus blunted, readily becomes untruthful. As a matter of fact he quickly resorts to it as a means of apparently covering up his delinquencies. The average boy who secretly smokes will look his father squarely in the eye and deny it. The boy who fails to deliver a message, because of stopping to smoke, is most resourceful in the invention of excuses, and in so doing the boy is but following the path of least resistance. He has no desire or intention to give up his cigarettes; perhaps he cannot. He possesses no bravery in the matter of self-confession, and usually no desire to possess it. He feels little or no compunction at lying; hence he

lies. Early in his smoking career, this boy ordinarily expects to make good his promises, and upon failing, he lies to excuse himself, but later in his career he lies with no intention whatever of keeping his word. There is only one person in the world who excels the inveterate cigarette-smoking youth in the matter of astuteness in lying and deceiving and that is the morphine fiend.

Laziness, untruthfulness and dishonesty constitute the logical and regular series following the inveterate use of cigarettes by boys. Laziness is a natural result of the depressing effect of tobacco upon both body and mind. Lying follows as a means of excusing laziness, and dishonesty is a natural outgrowth of both. The step from untruthfulness to dishonesty is an exceedingly short one. The statement that a boy who maliciously lies will steal is particularly true when applied to cigarette smokers. This moral obliquity is primarily due to the blunting effect of tobacco upon the finer senses of right and wrong. Cigarette smokers almost invariably become immune to the rights of others, and insist upon satisfying themselves even at the expense or discomfort of their dearest friends, and especially of their own kindred.

The use of cigarettes generates a constantly increasing demand for more, and without them the smoker is miserable and disagreeable. In advanced stages he will go almost to any extreme to obtain them—except to hard work. He is always shifting jobs. He wants something for nothing. He feels that the world is against him, and that it owes him a living. But no

matter what happens, work or no work, friends or no friends, money or no money, he *must* have his tobacco. In such frame of mind he will deceive even a friend who has sheltered him or given him food. He will borrow his widowed mother's savings on a promise to return, when he knows that such is impossible. He thinks only of self and self-gratification. Such an individual is a disgrace to a neighborhood, although not a real danger, as his dishonesty is known to all, and in consequence, his deceptions are few.

In this connection the findings of two of Salt Lake's prominent citizens will be of interest. Dr. Samuel H. Allen, a prominent surgeon and consultant of Salt Lake City, gives his estimate of the reliability of cigarette smoking boys in the following language:

"The tobacco user puts a brand on himself—he is like a branded calf. The brand reads like this: 'I use tobacco. Tobacco makes my nervous system weak. It brings on me a form of heart disease called "smokers' heart". It weakens my will power. I am not as good a student, nor as good as worker as the boy who does not use it. If you hire me to work for you I will not do as much nor as good work as the boy who does not smoke. During work hours I will stop to roll and smoke my cigarettes and I will then ask you to pay me for the time I spend doing this—that is, I will steal a little time from my employer every day. If you send me on an errand, I will stop on the way to smoke, and if I do not forget what I was sent for, I may get there too late to do your errand in time to be of any service. My breath and smoke will offend your customers. It

will pay you better to hire a cleaner boy than I am, a better student, a better worker, a more dependable boy, one who does not smoke.' ”

Chief Probation Officer Gaurdella Brown of Salt Lake City, who has had a very successful career in helping wayward boys, says :

“May I say that after eight years of experience as Probation Officer and having talked with more than twelve thousand boys and girls who were guilty of a variety of delinquencies, I am forced to the conclusion that the boy who is an habitual cigarette smoker is the most hopeless victim we have to contend with. When a group of boys is brought before me charged with offenses and I am not quite certain as to the guilt or innocence of either of them, I invariably separate the smokers from the non-smokers and proceed to interrogate the former group for my first information. I do this because I know that this class of offenders have neither the will power nor mental ability to hold fast to any previously arranged story or plan that may have been concocted by them. While the information I get from such a source is seldom correct, it gives me a clue whereby I can approach the non-smokers with an assurance that is unnecessary to possess when I am talking to the cigarette smoker. Mentally the habitual cigarette smoker, if you will pardon the expression, is an ‘easy mork’. Morally the habitual cigarette smoker is not only a victim of this filthy habit but is usually open to all manner of degeneracy. It is seldom, if ever, we come in contact with an habitual cigarette smoker who is morally clean and never yet have I found one whose

word could be relied upon. They have not the will power nor the stamina to look you squarely in the face and tell the truth. The young boy who becomes an habitual user of cigarettes before obtaining his majority is in my opinion a hopeless wreck. My experience teaches me that habitual cigarette smokers are unreliable quantities, mentally, morally and physically."

More and more, the country and the church are calling for strong, conservative, manly men, men of self-control and strength, men of honor and integrity, men of sacrifice and unselfishness. No boy who persists in smoking cigarettes need hope to be of great service to his country and his church, because he lacks the fundamental essentials of service—ambition and self-control. No one expects statesmen or Christian leaders to develop from among the smokers described in the paragraphs preceding.

XVIII

TOBACCO AND SCHOLARSHIP IN THE GRADES

Cigarette smoking by grade students is far more universal than is commonly suspected by most parents or even teachers. Wherever investigations have been made, the number found to be using tobacco is usually far in excess of that expected. Parents altogether too uncommonly fail to know what their *own* children are doing in this respect, or they regard the matter as of little or no consequence. In many communities where teachers and parents have believed the habit to be almost if not wholly absent, investigations have shown that fully fifty per cent of upper grade students used tobacco more or less regularly. It should be remembered that the tobacco habit among boys is invariably acquired clandestinely, and is generally not known to parents until the odor or fragments of tobacco in the clothing force the matter upon their attention. Parents are invariably surprised to find that their own children smoke.

The fact remains, however, that a great many grade children use tobacco and that the habit is far more destructive to children than the average parent realizes. As pointed out in another section, tobacco is not only a narcotic but an irritant as well. Just at a time in life when the child should be active and sweet-tempered the use of tobacco depresses and irritates him. Ambition for both mental and physical activity are replaced by a

desire for inactivity and a shirking of even the slightest responsibility. Kindness to parents and others soon disappears after the tobacco habit is acquired, and selfishness predominates. A cigarette smoking youth not only has but little desire for mental activity, but, what is equally as bad, he has sub-normal ability for it. Investigations have shown that such boys actually possess lower mentality than the average normal boy, and, furthermore, that the only way to restore this lost vitality is to prohibit the use of tobacco.

The tobacco problem among children is not limited to a single locality or state. If every teacher in the United States from the largest cities to the smallest country district, were called together, it would hardly be too much to say that scarcely a single individual would be found who is not willing to raise his voice against the tobacco evil. If the parents and other grownups will unite in a campaign against this monster evil, it can be conquered. Before satisfactory results are finally achieved, however, many grownups will themselves have to reform, others will have to become interested, and all will have to remain vigilantly awake to the seriousness of the situation.

The statements following could be added to almost indefinitely. Practically every experienced instructor in the country is now willing to raise his voice against the tobacco evil among boys. It will be noted that the statements come from every section of the country.

The late Judge Alexander McMaster of the Juvenile Court of Salt Lake, who was very successful

in his experience with boys, says of the seriousness of the tobacco habit:

"In my judgment, and with the experience I have had with thousands of boys, I am convinced that the most serious problem confronting the people of Utah, and the United States for that matter, is the cigarette habit. I believe it is doing more damage intellectually, morally and physically to our boys than all other sins combined, because it is the forerunner of many of the evils to which boys succumb. I have come to the conclusion that the following are among the most important objections to the cigarette habit:

1. It is a filthy habit for children to form.
2. It injures the health.
3. It weakens the will power.
4. It saps both physical and mental power.
5. It makes boys dishonest and unreliable.
6. It robs them of opportunities for securing positions of emolument and trust, as many of the large business institutions will not employ a boy who uses tobacco.
7. It is one of the chief causes of truancy. Out of the many boys who graduate from the eighth grade this spring, scarcely a corporal's guard will be tobacco users. They practically all fail in school."

L. R. Alderman, Superintendent School District No. 1, Portland, Oregon, says:

"The bad effects of cigarette smoking upon the boy cannot be over-stated. If persisted in, it causes mental

languor and finally dulls the mental faculties so that progress in school is greatly retarded. The loss of interest causes the boy to drop out of school sooner or later. The effect upon the boy morally and physically is just as great. Both the will and the physical constitution are weakened so that the powers of resistance are greatly diminished, resulting in many cases in moral delinquency and physical weakness."

J. M. Gwinn, Superintendent Public Schools, New Orleans, La., says:

"I am pleased to state that I can furnish you something better than my opinion on the influence of tobacco on boys. Under separate cover I am sending you a copy of my report of 1912-13, and would direct your attention to pages 104-5 of this report." (The report shows that 39 per cent of the smokers failed of promotion as compared with 19.9 per cent of all the boys enrolled.)

Ida L. Gregory, Clerk, Juvenile Court, City and County of Denver, Colo., says:

"We have found in many cases that boys become almost feeble in mentality through the use of the cigarette. Along educational lines the average cigarette smoker is two grades behind the normal boy who does not smoke. He is less able to resist temptation, and has a constant desire for the abnormal things of life; and as the boy grows older the desire for liquor naturally follows the cigarette habit. He soon develops habits of idleness, carelessness and disrespect."

Frank K. Graves, Professor Graded Schools, South Royalton, Vt., is quoted as saying:

"We have never yet found a bright active pupil in any of our schools who used cigarettes. On the contrary, we have found many dull, listless, backward pupils whose memories were treacherous and whose habits and natures were positively bad, who did use cigarettes, and I have come to believe that it is an utter impossibility for a boy to indulge in cigarette smoking to any great extent and at the same time succeed in study."

Professor William A. McKeever of the Kansas State Agricultural College, who has done a great deal of experimental work among cigarette-smoking boys, reports that out of several hundred tabulated cases in his possession some of the very youthful smokers have been reduced almost to a state of imbecility. Out of 2,336 who were attending public school only six were reported "bright students", about ten "average" and all the others "poor" or "worthless". He points out that the average cigarette-smoking youth intends to prepare his work, yet upon beginning to smoke, the depressant action of tobacco partly paralyzes his brain, and the tasks which previously looked serious and urgent, now appear trivial and unimportant. He at once becomes affable and companionable, and at the same time loses his former ideals of industry and aspiration. As the result of a great many investigations Professor McKeever declares that "in the case of boys and youths, cigarette smoking is very deleterious to the physical and mental well-being".

W. L. Bodine, Superintendent of Compulsory Education, Chicago, states that before he was engaged for this position he regarded the agitation against cigarettes as more or less unfounded and the work of irresponsible enthusiasts, but since he has become acquainted with the actual influence of tobacco upon scholarship he has come to the conclusion that "the cigarette evil is one of the most vital questions before the public of today and a peril to school children which should be eliminated". Superintendent Bodine comes into personal contact with more than fifteen thousand truants each year, and, in consequence, should be prepared to speak authoritatively upon such matters.

Superintendent Bodine states that he has sent 1,015 boys to the Chicago Parental School for habitual truancy, together with a few classroom incorrigibles, all of whom were between seven and fourteen years of age. Eighty per cent of this number were cigarette smokers. Their general scholarship may be judged from the following:

- 189 came from the First Grade,
- 217 came from the Second Grade,
- 301 came from the Third Grade,
- 146 came from the Fourth Grade,
- 47 came from the Fifth Grade,
- 140 came from the Sixth Grade,
- 4 came from the Seventh Grade.
- 1 came from the Eighth Grade.

The smokers came wholly from the first five grades

and the non-smokers almost exclusively from the sixth, seventh and eighth. A great many boys twelve and thirteen years old came from the first, second and third grades. Superintendent Bodine considers that he has proof "beyond doubt that cigarettes create backward pupils". It is interesting to know that cigarette smoking is fully as common among the spoiled children of the rich as the neglected ones of the poor.

The following data, taken from an article by Professor P. L. Lord in the *School Journal*, seem to show an undeniably close association between the use of tobacco and unwholesome conditions in general. The children involved were in attendance at the New York City Public schools. After ascertaining the habits of a large number of boys with respect to cigarette smoking, twenty were chosen by lot from each group. It is, of course, fully apparent that this method of selection eliminated any possibility of unfairness due to the probable inclinations, one way or the other, of those in charge, and, in consequence, the group should be representative of the whole.

The boys were taken from the same classes and the same schools, thus insuring complete similarity in the matter of school environment. Their ages ranged from ten to seventeen years, and averaged fourteen. The selection by lot took them from among the rich and the poor, the pampered and the neglected. The following reports were made imparitally by ten teachers after the boys had been under observation for several months:

	Number of Smokers	Number of Non-smokers
Nervous	14	1
Impaired hearing	13	1
Poor workers or not able to work continuously	17	1
Poor memory	12	1
Slow thinkers	19	3
Bad manners	16	2
Untruthful	9	0
Low Deportment	13	1
Poor physical condition	12	2
Bad moral condition	14	0
Bad mental condition	18	1
Street loafers	16	0
Out nights	15	0
Careless in dress	12	4
Not neat and clean	12	1
Truants	10	0
Low rank in studies	18	3
Failed of promotion	79*	2*
Older than average of grade	19	2

*Times.

A glance at the two columns is quite sufficient to show the marked inferiority of the smokers. The total number of delinquencies for the twenty smokers is 338, an average of seventeen for each individual, while among the non-smokers the average is only $1\frac{1}{4}$. The items connecting low mentality with cigarette smoking are just here of especial interest.

Out of every twenty smokers nineteen are poor thinkers.

Eighteen out of twenty smokers are in bad mental condition and rank low in their studies.

There are forty times as many failures of promotion among the smokers as among the non-smokers.

Practically every smoker is older than the average for the grade, and practically every non-smoker younger than the average.

It would scarcely be too much to say that there is not a single vice present among children of the grades doing more harm than cigarettes. Another condition almost equally as grave is that average American parents do not realize this to be the case. Furthermore, of the small percentage of parents who are familiar with the evil effects of tobacco, most of them seem to think that it is the children of other men and women who smoke and not their own. When they finally awaken to the seriousness of the situation it is ordinarily only when their own children are so far injured by the tobacco habit that recovery is exceedingly difficult if not impossible.

There does not appear to be a single community in the United States, no matter how small, that has not been effected by the tobacco peril, and the injury so wrought is commonly sufficient to stand between the user and success.

XIX

TOBACCO AND JUVENILE DELINQUENCY

Investigations touching the use of tobacco by boys, invariably disclose a close association of this habit and failure in the performance of duty. It has been pointed out, and that very properly, that tobacco should not be blamed for all of the delinquencies of its users. Some writers have claimed that a large percentage of the children who acquire the habit are already below normal in mentality, and, therefore, do wrong primarily because of natural weakness. There is probably considerable truth in the statement that weak-minded children fall prey to the habit more readily than do those of stronger character, and, in consequence, tobacco should not be blamed for all of the wrong-doings of juvenile users.

Note should be made of the fact, however, that if tobacco singles out the weaker children as its victims, its presence becomes just that much more menacing to a community. A vicious habit to which children, already below normal, naturally fall prey, calls for unusual attention. Such a condition would seem to demand increased diligence on the part of those engaged in the prevention of the habit.

Too much emphasis, however, must not be placed upon the statement that tobacco users are normally of lower mentality than non-users, and, therefore, that tobacco should not be held responsible for the user's

delinquencies, as it is a well known fact, among all who deal with the children, that even brilliant students become listless and backward almost immediately upon acquiring the habit. And, therefore, while it is likely true that smoking is sometimes only associated with delinquencies, and not the primary cause, yet it is equally true that in many cases tobacco is the actual causative factor.

It, of course, should not be held that the mere smoking of a cigarette, immediately implants a desire for disobedience to parents and disregard for civil laws, but that it acts as an introduction to improper thoughts and to unwholesome company there can be little question. The results, however, are the same and the indictment against tobacco equally grave. That the habit among boys is associated with low mentality and marked disregard for prevailing conceptions of right and wrong, no one who has studied the matter will attempt to deny.

The chief cause of delinquency among juvenile tobacco users can perhaps first of all be traced to the fact that the habit is almost universally acquired without the knowledge of parents. There is scarcely a father in the civilized world who would teach his child the use of tobacco, or who would knowingly permit him to be taught by some one else. Even fathers who vigorously defend the habit in themselves advise their children against it, and not uncommonly use much more severe means than mere advice. Moreover, children do not acquire the habit because of any encouragement they have received in public schools or church or-

ganizations. As a matter of fact, the young smoker is not only going contrary to counsel of his parents and teachers, but what is perhaps even more serious, *he knows* that he is doing so.

The mere act of repeated disobedience engenders disregard. Continued indulgence can be maintained only by deception. Disobedience to parents and other authority marks the beginning of a long line of delinquencies. No boy or young man can maintain his own self-respect and continue to disobey his parents. The secret practice of smoking necessarily leads every boy into deceiving his mother, and just the moment that he has "successfully" lied to his mother, he is fully ready to lie to the world. He talks to his companions of the way in which he escaped detection, and how he outwitted the "old woman." His disregard for authority has already become well-developed, and he has long since taken his smoking companions into his confidence and divorced his best friends.

It should be no wonder, therefore, that cigarette smoking boys will lie to the public school teacher in order to explain an absence caused by indulgence with companions. A boy who will disregard the regulations of the home should not be expected to support those of his school, and a boy who will continuously lie to his mother, will not be truthful to his teacher. After the sanctity of the home has been transgressed, nothing remains sacred.

Aside from the deception invariably arising from clandestine smoking, the use of tobacco effects the boy physiologically in such a manner as to make him an

easy prey for a coterie of vices. The narcotic effect of this drug reduces not only the boy's ambition, but also his ability. It induces desire for rest and inactivity when the normal boy should be a bundle of impulses and ambition, and thus strikes directly at nature's chief means of development. Inactivity is the curse of boyhood; activity properly directed is the salvation. In this regard the use of tobacco aims at both physical and mental development. Science has fully demonstrated that even strong men under the influence of this narcotic not only care less for work, but are actually less able to do it. Juvenile smokers while indulging, invariably become idle both in body and mind.

No one ever saw a group of cigarette-smoking boys rushing off to participate in some strenuous athletic activity.. If they attend at all, they straggle along and then only to sit on the side lines. No one ever knew of such boys industriously helping the father with the morning's work in order to be able to take a hike into the mountains. No one ever knew of their vieing with one another for high scholarship positions. Tobacco among boys is an ambition-killer of both body and soul; its narcotic effect cannot operate otherwise.

No explanation is needed for the attitude of the cigarette-smoking lad who is willing that his mother should carry in the coal and water, and that his father should build the fires and do the chores while he himself remains in bed. It is equally unnecessary to explain why he is unashamed to see his classmates advanced over him when he fails of promotion. A narcotic drug of this kind should be expected to operate just as it does

in convincing the delinquent that he has sufficient justification for remaining away from school even at the slightest excuse. If the use of tobacco did not cause its users to lose their ambition, the scientific world would remove it from its present classification among the narcotics.

Neither is it difficult to understand why juvenile tobacco users fall behind in their grades and drop out of school. Desire for inactivity while in school and loss of ambition generally, coupled with marked tendency toward truancy, not to mention reduced mentality, constitute ample reasons.

By reason of their peculiar positions, public school teachers and juvenile court officials are perhaps best prepared to speak of tobacco as a factor in delinquency among boys.

There is probably not a single case on record of a public school teacher who has not experienced marked difficulty with smoking boys. Recently letters were sent out to Superintendents of schools in every state in the Union, asking for their experience in this matter. The answers were absolutely unanimous in condemning the tobacco habit among juveniles. The statements following come from educators in various sections of the country and are representative of the general sentiment:

M. G. Claw, Superintendent Sioux City Public Schools, Sioux City, Ia.:

"I think it can be stated as axiomatic that the habitual users of cigarettes in the grade schools are always the retarded pupils and the pupils who give trouble

from the standpoint of discipline and who, of course, become repeaters and simply hang on for a few years until the age law allows them to drop out of school. It is also true that the type of youngster in the high school who is regarded as the school loafer and the special problem is almost always the cigarette user."

Wm. S. Smiley, Superintendent Public Schools, Denver, Colorado:

"I have been connected with the East Side High School, the largest high school of the city, either as teacher or principal or superintendent, from 1886 to the present time. I believe that the cigarette evil among young people is the source of more mental, moral and physical delinquency than any other evil that I know. I have seen such consequences of the insidious effects of nicotine that I feel sure of my ground in making the above statement. If any father had my experience, he could not by any possibility, set an example to his children of any indulgence in the tobacco habit. I am no crank in saying this. I feel as sure of the truth of my assertion as I do that two and two make four."

L. C. Eggertsen, Superintendent Public Schools, Provo, Utah:

"In the eighth grade, 90% of the cases where pupils are tardy the cigarette is the cause. In 70% of the cases of retarded pupils, in the fifth and sixth grades, cigarettes were the cause. Eighty per cent of the pupils who were not morally strong were users of tobacco. Whenever we find a boy that is falling behind in our seventh,

eighth and high school departments, investigation shows that he is a cigarette user."

H. L. Houghton, General Secretary, Charity Bureau, Sioux City, Ia.:

"As head of the department of attendance in our public schools we have made an investigation of the effect of tobacco upon grade school boys and find that universally the boys who use tobacco are the boys who fail to pass; who are guilty of truancy and other delinquencies; who become stupid and shiftless; who lose the zest of life and enthusiasm for better things. We went from building to building and talked to the boys themselves as well as to the teachers and found the boys who are bright in their studies begin to fail to pass after they begin to use tobacco. As Juvenile Officer I believe without exception every boy committed to the State Reform School was a user of tobacco. When we promoted the tobacco cure, large numbers of boys came themselves begging for the cure showing that the effect of tobacco using was destructive to will power. In short, the effect of the cigarette habit has been found to be most disastrous."

Professor William A. McKeever of the Kansas State Agricultural College, after years of experience in child study says:

"One of the greatest meances to our moral and intellectual well-being today is the fact that ciaggrette smoking is becoming a popular fad among boys and young men, while the use of a strong pipe is a close second in favor. Go where you will in this broad land of ours, and the pale faces, blear eyes, trembling fingers

and the foul stench of cigarette fumes tell the same pathetic story. This most serious blight upon the bloom and beauty of our American boyhood is chargeable to paternal ignorance and carelessness. For the past eight years I have been tracing out the cigarette boy's biography, and have found that in practically all cases the lad began his smoking habit clandestinely, at an early age, and with little or no thought of its seriousness, while the fond parents perhaps believed that their boy was too good to engage in such a practice."

Cigarette-smoking boys encounter no little difficulty in providing themselves with tobacco. In the first place the habit is acquired without the consent or knowledge of their parents, and, in consequence, new supplies must be obtained in secret and with money that they themselves can provide. In the second place civil laws almost universally prohibit its sale to minors. Two difficulties are at once encountered: the obtaining of money and the obtaining of the tobacco, both of which are likely to lead astray.

The tobacco habit does not leave its adherents in a frame of mind to secure more simply when convenience provides. When the supply is exhausted more must be obtained, no matter what the cost. It is a remarkable fact that men, during hard times, do not use less tobacco; they may buy fewer vegetables, shoes and clothing, but the usual amount of tobacco must be provided. The longing desire for tobacco after the habit is once acquired compels boys to go almost to any length for it. Even after parents have learned of the boy's practices

they are commonly unwilling to provide for his wants. His finances are usually very much limited, and, in consequence, he is pushed to the full extent of his resources. For such boys, among whom ambition and moral sense of right and wrong are already very much blunted, the step to unfairness is but a very short one. Money is often obtained by borrowing with promise of an early return. The mother is usually the first victim and then nearby friends. Inability to pay when promised brings on further embarrassment. The writer is acquainted with the case of a young man who borrowed money, which his widowed mother had earned by washing, and that too with no thought or prospects of returning it.

Articles and trinkets of pecuniary value about the house are often secretly disposed of. And next comes the selling of articles picked up in the neighborhood. As soon as a young man has successfully deceived his parents he is willing to match his wits with officers of the law, for with no respect for the home he has but little for the community. This tobacco career from the start has engendered disobedience, deceit, disregard for the rights of others, incorrigibility, untruthfulness, dishonesty and often crime.

Tobacco takes boys from the wholesome presence of their homes and places them upon the street. It divorces them from the influence of good books and makes them companions of the street loafer and his unsavory stories. It dismisses them from school and introduces them into the lives of the ignorant. It changes upright, obedient boys into mere shadows of their former selves, once straightforward and whole-

some, but now willing to resort even to crime if necessary that the demands of perverted appetite may be supplied.

Such are the boys who make up the great bulk of those who appear before the Juvenile Courts from New York to California. Experience everywhere is the same—the association of juvenile delinquency with tobacco. The following quotations, selected at random from nearly one hundred letters in the writer's possession, show the universal attitude of Juvenile Court officials.

C. E. Wilson, Chief Probation Officer, Sacramento, California:

"I will state that in nearly every case of delinquency, I find that the boy is an habitual user of cigarettes, and there is no doubt that they aid in the lowering of his mentality, and physical strength; and in the lowering of his mentality, his morals and ideals are also lowered."

John H. Stevenson, Municipal Judge, Portland, Oregon:

"Briefly stated, my conviction is that the cigarette, howsoever the scientific fact of its influence as a contributing factor in juvenile delinquency, mentally, morally and physically, is a vice that seems to be almost always associated with delinquent juveniles. My observation has been that a large part of crime among boys is generated in pool rooms and similar places of public resort, and that the cigarette is a conspicuous incident to their habits of personal ill conduct. I have it upon authority of eminent physicians that the ciga-

rette is a contributing force in breaking down the moral constitutions of young men and boys, and in view of the almost universal association of the cigarette and delinquency, I am prepared to accept the conclusion that it is a very material contributing agent."

Edward O'Meara, Judge of City Court, New Haven, Connecticut:

"I have observed that in a large percentage of cases these youthful criminals have been addicted to cigarette smoking. There is absolutely no question in my mind but that the use of cigarettes by young boys is responsible in a large measure for juvenile delinquents and for their retardation both mentally and physically."

Katherine N. Shaw, Probation Officer, Ithaca, New York:

"The cigarette is the boy's worst enemy, as it exercises a definite control upon the spinal cord, interferes with the functions of the eye and makes the boy nervous and strikes a blow at the most vital organ of the body. The cigarette will master the will power and dwarf and enfeeble the brain. It makes cowards and sneaks of boys and interferes with a successful prosecution of study. It makes a boy dishonest, untruthful and impure and criminal in his life. It goes hand in hand with impure literature, liquors, and morphine. It is the curse of the boy, body, mind and soul. The tendency to beer drinking is greatly strengthened by cigarette smoking. Ninety-five per cent of cases under my supervision from juvenile courts are cigarette smokers."

One of the most serious charges made against the

use of tobacco by boys is that it excites and precociously develops sexual activity. Premature puberty creates sexual propensities and leads to secret practices, which may permanently imperil genitive powers. Dr. L. von Frankl-Hochwart, the great scientist of Vienna, gives the histories of seventy "young men who were heavy smokers and who complained of considerable abnormality of the genital function". He reports that cigarette smoking appeared to be closely associated, and that abstinence improved the condition of many of them. In later life tobacco is thought prematurely to produce sterility in men.

Unfortunately, experience is everywhere showing that the juvenile tobacco user is very difficult if not impossible to reform; when once the habit has been acquired the user very seldom frees himself from its grasp. Safety lies only in the path of prevention.

If American parents will unitedly rise up against this monster evil they can almost immediately avoid a large part of the anguish now arising from the waywardness of their boys, but until they do so they must expect to reap the reward of the sowing.

XX

COMBATting THE TOBACCO EVIL

Combatting the tobacco evil—a very simple statement but a very difficult task. Anyone who ventures into this reform will find almost numberless obstacles in his path. One of the most discouraging features of the entire problem is the apparent indifference with which most people, both smokers and non-smokers, view it. At the outset nothing is more apparent than the absolute necessity of a campaign of enthusiastic enlightenment, conducted first of all among the grown-ups.

The complacency with which parents, whose boys are being dragged into pernicious practices by the use of this vicious substance, commonly view the matter is nothing short of alarming. The belief is altogether too popularly held that “boys must sow their wild oats”. Parents seem to forget that an inviolable law of this vicious substance, commonly view the matter is atoned for and lived down, and that the slightest transgression into sin must be retraced in later life. As a matter of fact, habits acquired in youth almost invariably point the way for the future man to follow. The lives and practices of human beings are not altogether unlike those of rivers, which in youth meander aimlessly across gently sloping continents toward the sea, but which, as time passes, become more firmly entrenched and finally successfully resist any and

all efforts to remove them from the channels they have dug. The old adage that "a stitch in time saves nine" has no more proper application than in the early training of a boy.

Parents will have to be awakened to the fact that early training is essential to safety. They will have to be taught the seriousness of this devastating scourge. They must know that practically as many boys and young men are monthly killed by the tobacco habit as there were lives lost in the great Titanic or Lusitania disasters. Every parent should have the fact seared deeply into his soul that when once the cigarette habit has gotten marked control of a boy his fate is almost as surely sealed as is that of the opium fiend.

Parents should be wide awake to the practices of their *own* boys. The ignorant confidence of parents in children not uncommonly permits, and perhaps at times even encourages, the acquisition of undesirable habits. Fathers should know their boys—not suspect them—and have a familiar working acquaintance with each one's temptations and aspirations.

Any movement, therefore, will be a failure from the outset that does not enthusiastically educate the parent in the seriousness of this habit and give to each one of them an active desire to assist in a campaign for better boys.

When the parents have become actively enlightened, undoubtedly the most profitable point of attack is among boys rather than men, for it seems to be universally true that proselyting among grownups is

more or less a failure. Among the boys the work will be conducted along two lines—prevention and cure.

AVOIDING THE TOBACCO HABIT.—When attention is turned to the boy himself it must be remembered that here, as in all other cases, prevention is far more desirable than cure. As a matter of fact, anti-tobacco workers have become very much discouraged in their efforts to induce smokers to abandon the habit. Everyone who has undertaken this work reports much the same thing. Cigarette smokers in particular are very easily converted to the error of their ways, and are especially profuse in their denunciation of the habit and in their determination to abandon it, but the conversion seldom lasts. They drift back to it quite as readily as they are willing to denounce it. We of course are speaking only in general terms. Here and there certain individuals of exceptional determination and strength leave off the habit and never return to it, but the bulk of mankind seem to be so constituted that when their systems once become saturated with tobacco-drugs they are never quite able to regain their former freedom. The picture perhaps should not be painted too gloomily for scientific discovery of recent years is holding out brilliant rays of hope to those who are willing to free themselves from this “arch enemy of human efficiency”. Anti-tobacco workers, however, have learned that their greatest success invariably comes through prevention.

The tobacco habit is acquired largely during the period of adolescence, although some smokers begin when mere children and others not until late in life. The

preventive phase of the problem seems, however, to be especially concerned with adolescents and young men. If the precise causes for acquiring the habit were fully known its prevention would be greatly simplified.

The universality of the habit has been used as an argument that there exists in man's nature some real craving which tobacco naturally satisfies. Others argue that these cravings do not exist until created by participation, and, therefore, are wholly unnatural. Non-smokers, who have never used tobacco, almost universally declare that they have no desire for it whatever. The fact that the first indulgence in tobacco invariably produces nausea and vomiting seems to be proof that it is repulsive to our natural bodies. It is only after repeated doses that the body finally submits.

Smokers and non-smokers alike assert that boys and young men acquire the habit very largely through instinctive imitation. No influence is stronger with boys than the desire to become men, and, in consequence, they readily adopt any and all practices which they feel will make them manly. It would appear, therefore, that as long as we have smoking men we will have smoking boys.

The man who cannot say "follow me" has no real place in the anti-tobacco campaign. He may preach and expound, but his influence is detrimental rather than beneficial. Fathers may make excuses for their own short-comings, but their sons will none-the-less follow their examples. Preachers and others may assert that cigarettes are bad for boys and harmless for grownups, but boys will not believe it. They want to

be men, and insist upon adopting practices which in their judgment make them appear manly. *Imitation* is without doubt one of the strongest factors in inducing boys and young men to smoke, and, therefore, before any pronounced success can be expected every leader in the movement must himself become an abstainer.

As suggested above, the campaign against tobacco is one largely of enlightenment. Anti-tobacco workers, first of all, should familiarize themselves with the latest scientific findings concerning the effects of the tobacco habit. They should become enthusiastic but not sensational; there is an abundance of evidence against this evil without resorting to questionable arguments. Understatement rather than overstatement will be conducive to better results. In the main, smokers and non-smokers are quite unfamiliar with the extent and nature of tobacco poisoning. Campaigns of conservative enlightenment cannot but be followed by far-reaching good. Information will be conveyed to boys and young men chiefly in three ways: by parents, by day school teachers, and by church organizations.

Non-smoking parents may profitably talk to their sons at a very early age about the injurious effects of tobacco, and even before the children are old enough to be instructed concerning the matter, the influence of the home will have great weight with them. The problem should never be overstated, nor should threats of punishment be made if indulgence is suspected. The father must show complete confidence in the boy; as a matter of fact, the boy absolutely demands it in ex-

change for obedience. If the boy is fully convinced of the father's sincerity he will seldom break confidence. A "chummy" father will have more weight with his son than will all other companions combined.

Schools should devote more attention to the evils of tobacco. Textbooks should make this matter even more emphatic. And above all, in this connection, no grade teacher should be employed who is addicted to any form of the tobacco habit. Teachers, next to parents, are the children's ideals, and to a very great extent influence even the details of their lives. A smoking teacher can easily neutralize the teachings of a whole community. School surveys not uncommonly reveal a very much larger percentage of smoking boys than could possibly have been expected. By careful, vigilant watching, along with intelligent instruction, the public school teachers may become very active factors in curtailing the spread of this pernicious practice.

Church organizations, especially Sunday Schools, are well designed to instruct boys and young men in this matter. The Church of Jesus Christ of Latter-day Saints possesses perhaps the most unusual facilities in this connection, and without doubt the people of this organization are already freer from the use of tobacco than any other similar group in the world. One of its doctrines teaches that "tobacco is not good for man", and of recent years abstinence from it has been made a requirement of full fellowship. The unparalleled organization of this church makes it possible, with a few days' notice, for every ward unit to dis-

cuss the same matter at precisely the same time. Parents' classes, operating in connection with the Sunday Schools, exist in every community. The Mutual Improvement Associations, for young men and young women, similarly organized, can also do a wonderful work against the tobacco evil.

One of the most potent factors in the prevention of tobacco usage is the proper attitude of young women toward the habit. Although they may not be fully aware of it, they have within their power to say whether or not their men companions shall indulge. Altogether too often, however, young women not only permit but actually encourage smoking. This statement is not made as a justification for men's actions, but as a disparagement of women's attitude.

It will be well for all anti-tobacco workers to remember that isolated and sporadic efforts in any reform do not lead to pronounced success. The tobacco combination in America is so thoroughly entrenched behind men's appetites and millions of money that its overthrow will be possible only by a solid phalanx of united and intelligent workers. The tobacco habit will be uprooted with far more difficulty than the liquor habit. Its principal danger seems to lie in the fact that so many consider it harmless. One prominent writer recently said that far less harm would be done by tobacco if it were more harmful. A California attorney states as the result of many years of observation that tobacco is far more injurious than alcohol because it involves more and better men. Civilized man has long paid bounties upon ferocious ani-

mals because of their supposed menace to him, but has left unnoticed the incomparably more dangerous house-fly on his dining room table.

First of all, therefore, the nature and seriousness of the problem must be well understood, followed by well-directed and concerted efforts. The campaign is one of enlightenment, conducted in the broad daylight of recent scientific discovery. Through the intelligent cooperation of parents, schools, and churches our boys and young men will gradually be saved from the clutches of the tobacco monster.

THE "BAD" BOY.—One of the greatest fallacies extant, with respect to boys, is the popular feeling that many of them are bad, maliciously bad. As proof of this "vicious inclination" such examples as rowdiness in Sunday school, boisterous conduct at nights, and clandestine cigarette smoking, are commonly cited. There can be no question that many boys are over-riding the patience of Sunday school teachers, that they are destroying property on Hallowe'en, and that they are smoking without the knowledge of their parents, yet for all this, there must be some reason. Older people are altogether too prone to forget the impulses of youth and to interpret acts of impropriety as indicative of vicious intent. It is quite true that if mature men should indulge in capers commonly practiced by boys, the civil law could properly be called into operation; but boys are not men, even though grownups almost everywhere judge them by that standard. Neither are boys of this impulsive age any longer children, and they invariably fail to respond

when so regarded, either by parent or teacher. They are a mixture of child and man, possessing a child's experience and a man's ambition, a child's foresight and a man's daring, a child's wisdom and a man's desire, a child's intelligence and more than a man's self-esteem. They are fully as indifferent to the interests of childhood as are the semi-civilized barbarians to the traditions and practices of an abandoned life, and equally as irresponsible to the ways of manhood as are these half savages to the demands of civilization. Yet if they fail to respond to the methods successfully employed for children, or for men, they are at once regarded as "rough-necks", "toughs", and "incorrigibles".

There can be no question that this failure to understand boys has been primarily responsible for many of their wrong-doings. At certain stages of development, boys have no compunction in being looked upon as "tough", in fact when they learn that they are so regarded, they take it as a compliment and at once set out to make good the suspicion. They enjoy being in the lime-light even better than do grownups. They are in the height of their glory when they feel that their depredations are shocking the community. They take as keen delight in their defiance of social regulations, as do bandits in their disregard of civil law. Naturally enough this attitude commonly leads to complications: the immature individual seldom knows enough to stop without going too far. A boy's knowing that he is regarded as "tough" is one of the most efficient means of making him so.

On the other hand, it is no easy task for a grownup to put himself in the place of a boy. He recalls with some ease the fancies and ambitions of childhood, but the erratic transitory, changeable impulses of youth do not seem to have left a deep impression upon his mind. Childhood is a period of stable graded development; youth is characterized by rapid, discontinuous, transitory change. The one is easily recalled, easily understood; the other is easily forgotten and often considered abnormal.

The successful training of youth, therefore, can be accomplished only by studious and painstaking care. The fact is coming to be recognized among educators that only the very best teachers available should be placed in charge of maturing boys. The term *best* in this connection does not necessarily mean the most highly educated from a scholastic point of view, but those who have the ability, coupled with education, to recall the feelings, the ambitions and temptations of youth, and who are, therefore, prepared to meet the boys on their own ground and to view matters as they do. This ability to understand boys is often possessed to a marked extent by the "unlearned", although no one will deny that education should materially assist in the matter. Of all people who understand boys best is the mother, and second perhaps the father. Unfortunately, however, even among parents, boys are frequently censured, misjudged and abandoned as "bad", while as a matter of fact they are simply misunderstood.

Instead of being maliciously bad, boys are seldom

other than innately good. In order to realize the full weight of this statement, one has only to obtain the confidence of an ordinary boy. His integrity and loyalty are not surpassed by that of staunchest manhood. His promise to a trusted friend will never be broken. There is something more genuine in the shake of a boy's hand, the expression of his eye, and the tone of his voice, when once his confidence has been obtained, that is seldom witnessed in grownups. He has not learned the art of deceit, so generally practiced in later years, and, in consequence, honesty and loyalty follow as natural corollaries of confidence and friendship.

And again, contrary to prevailing impressions, boys are easily trained to the right. They are much more plastic in the hands of a friend than is full grown manhood. They have no deep-seated habits to abandon, no past to repent of, no fields to reap, no handicaps to overcome. They are prepared to begin work and to begin it at once. Their directions in life are undetermined and their channels not yet hewn. The whole world lies before them and they are willing to travel in the direction indicated by a trusted friend. But boys insist upon confidence of the genuine kind; pretended friendship, especially of the once-a-week sort, they easily detect, and quickly despise. To be successful with boys, parents and teachers must know them as they are, enjoy their pleasures with them, obtain their complete confidence, and, by no means the least, be absolutely true to them.

LEAVING OFF THE HABIT.—Anti-tobacco workers

should not become discouraged if their efforts do not seem to be immediately successful. As Professor Farnum of Yale University recently said: "One peculiarity of the tobacco habit is that, while it is often difficult to acquire, it is still more difficult to shake off. Indeed, in most cases the will is as much bound as if the smoker had signed, sealed and delivered a mortgage on his own personality. This is well understood by the tobacco trust, which is giving away cigarettes to the people of China in the confidence that, once the habit has been acquired, the trust can collect its annual tribute, almost as surely as if it had conquered the country in war."

Some idea of the permanency of the enslaving grasp which the habit has upon its victims can be further gained from the following statement of Dr. Kellogg, who it will be observed regards tobacco as more difficult to abandon than alcohol: "These facts I have verified in the treatment of several hundreds of cases of alcoholic and tobacco addiction. In treating these cases, I have been constantly impressed by two important facts: First, it is rarely, almost never, possible to effect a radical cure of the alcohol habit when the patient cannot be induced to give up also the tobacco habit. Second, in the great-majority of cases in which the two drugs are being used, the tobacco habit was the fundamental one; several patients have said to me: 'I can give up alcohol without difficulty, but I can not go away without my tobacco'. The alcohol habit was evidently only supplementary, serving no other purpose than to accentu-

ate the pleasure secured through the tobacco habit, or to afford a temporary antidote to its toxic effects. I have been so long convinced of the importance of these ideas that for twenty years I have refused to undertake the treatment of cases of alcoholism, without also prescribing as a preliminary the abandonment of tobacco and any other hypnotic drug."

When working for the reformation of tobacco users, especially boys, one should keep well in mind the mental and physical condition of the individual. Tobacco is a narcotic—an ambition-destroyer of both body and mind. Its use, therefore, not only reduces physical strength and endurance, but also mental desire for betterment. The user is in the doubly unfortunate condition of being physically weakened and of not having normal mental strength to assist in overcoming it. Any juvenile smoker who fails to keep his promises should not be classed with the normal individual who similarly offers disappointments. Naturally enough, he is easily influenced both for good and for bad, but when left alone he seldom, if ever, has sufficient strength to carry out his promises of reformation. On the other hand, such an individual readily falls prey to successively more serious vices.

Authorities who have been dealing with the reform of boys universally agree that before any real improvement can be made the tobacco habit must go. Dr. E. C. Meyerding, Director of Hygiene in the Public Schools of Saint Paul, recently said: "We have many cases of children who were tobacco users, that were behind in grade, poor health, incorrigible and who have

improved to the normal standard simply by stopping the use of tobacco."

Judge W. W. Tindall, of the Juvenile Court of Atlanta, Georgia, says: "Nearly all boys brought into the Juvenile Court are cigarette smokers. It is my observation that nothing can be done with a boy on probation if he persists in smoking. Hence, a boy's smoking, after we put him on probation, is generally considered a violation of the terms of probation, and the boy is taken in custody again. For we believe that smoking weakens a boy's will and burns out his finer mental, moral and physical fiber."

Of the possibility of reform after discontinuing the habit Superintendent E. O. Holland of Louisville, Kentucky, says: "By the elimination of cigarette smoking and other bad habits, the mental, moral and physical delinquent can frequently be saved. The movement to eradicate cigarette smoking among boys is a splendid one, and should be taken up in conjunction with the general question of studying the lives of young people to see what other things indulged in by them are injurious."

Campaigns for the reform of tobacco users are usually conducted along two lines—prohibition and enlightenment. Nearly every state in the Union has placed upon its statutes laws prohibiting the use of tobacco by minors. These laws have not been anything like universally enforced, primarily because of the general belief among grownups that they are discriminatory. Non-smokers of course do not understand why the use of tobacco among boys should be

regarded as a crime, and among men as a virtue. Just why a boy at twenty years of age should be sent to a detention home and another of twenty-one should be admitted into the best classes of society is admittedly difficult to understand. It is impossible to conceive of a smoking parent who could conscientiously inform on a boy of eighteen for doing the same things of which he himself is guilty.

The time will without doubt come when laws will be enacted prohibiting the use of tobacco by everyone. But in the meantime our prohibitory laws for children are of very great worth, even if they do encourage clandestine smoking among minors. One of the most discouraging features in Juvenile Court procedure is the apparent indifference in which grownups look upon the violation of this law. Parents generally should awaken to the fact that good laws and good court officials alone cannot make a good community. Officials must have the active support of citizens. No matter how commendable a law may be, it will utterly fail if the sympathy of the community is not aligned with its enforcement.

Strict enforcement of laws will aid greatly in the solution of the tobacco problem. But beyond the boy is the smoking parent, who also must be converted. One scarcely needs prophetic vision to state that the time will come when the whole nation will rise up and legislate against the use of tobacco even by adults. Anti-tobacco advocates, however, must not rely upon force. Men must be converted; compulsion alone is vain.

Individual work among boys has been of great practical value both in the prevention and cure of the tobacco habit. Anti-tobacco workers should not feel that they have done their full duty in distributing literature, in conducting classes, or in giving public lectures. The "follow-up" method is absolutely essential, especially with young men who have already acquired the habit. Neither should individuals be condemned who have promised to reform and who later have not made good. It must be remembered that the tobacco evil in time entrenches itself into the lives of its devotees almost, if not quite, as thoroughly as does opium. Undoubtedly there are a great many smokers who do not possess sufficient will power to abandon the habit, no matter how fully they may be converted to the necessity of doing so. The writer is personally acquainted with several young men who, with tears streaming from their eyes, have told him they would never use the poison again, but who, when left alone, quickly relapsed. A young acquaintance who had recently lost his wife, was shortly after sent to a hospital because of a serious bodily injury. While there he had days and weeks in which to ponder on his past life and his association with his recently departed companion. His determination to reform in regard to the tobacco habit was strengthened by the miraculous way in which his own life had been spared. When well advanced toward recovery, he narrated to the writer the things which he saw while still unconscious from the almost fatal accident which had sent him to the hospital. He felt that he owed his life to the beneficence of Deity and that he

himself henceforth must be clean and obedient. No one could have been more sincere in his repentance and in his desire to live a better life. But soon after his discharge from the hospital the old hankerings for tobacco, aided by the example of improper companions, finally overcame him. On a later occasion in conversation with the writer he confessed his utter inability to cope with the tobacco monster. Today, he still smokes, and today he is still converted to the full necessity of reform; the spirit says "yes", but his nicotine master holds him fast.

Strong men of exceptional will power should not universally condemn others who fail to reform. In the early stages of tobacco use, anyone with desire can reform, but as time passes the tobacco monster sends its tentacles farther and farther into every fibre of the human system until finally it becomes master of soul and body. The proportion of adults who are able completely to abandon the practice is very small in comparison with the vast number who relapse. Among younger smokers who have not tried to reform the statement is commonly heard, "Oh, I can stop any time I want to", but among older smokers this opinion is seldom voiced, evidently because most of them have tried, and failed. If reform is to be expected it should be started early.

The individual who wants to reform should be helped, for when left alone he usually fails. He should be looked upon as an abnormal being weakened both in body and mind. The first step in the treatment of the repentant tobacco user must be designed to bring about

a marked change in his mental and physical conditions, both of which will likely respond to the same stimulus. In the first place he should be transferred to healthful surroundings away from the contaminating influences of his former companions. He is seldom able to overcome when constantly tempted by those about him. He should be provided with plenty of strenuous out-of-door exercise. An idle brain with an idle body naturally reverts to former thoughts and practices.

The food he eats should be selected with especial attention to his particular physical condition. Stimulating articles of diet including meat, tea, coffee, alcoholic beverages, and condiments should be studiously avoided, as these are thought to intensify the cravings for narcotics. The diet should consist essentially of fruits, well cooked vegetables and probably milk, although in some cases the latter is not always thought to be suitable. The moderate use of nuts, well masticated, is considered to be of value. The free use of sub-acid fruits, such as peaches, pears, apples, pineapples, etc., at the close of each meal has been attended by good results. The aim should be to avoid all foods and drinks which intensify the cravings for tobacco, and to adopt a diet such as that suggested which will lessen it.

Tobacco poisons stored in the body commonly exhibit their ill effects in nervousness and depression for a period of several days after the habit has been abandoned. One of the most valuable factors in helping to eliminate these poisons is the daily

bath taken either at night or morning. The Turkish bath seems to be preferable, although when conveniences are not at hand, a pail of hot water with soap and sponge, will suffice. The bath should be followed by brisk rubbing with a coarse towel. Free movement of the bowels will aid materially in the elimination of tobacco poisons.

Of recent years anti-cigarette workers of Chicago and elsewhere have employed, with reported good results, a mouth wash of silver nitrate solution, consisting of from one to two parts of silver nitrate dissolved in four hundred parts of water. *The treatment should be employed, however, only under the direction of a competent physician.* It is recommended that the wash be brought into thorough contact with the lining of the mouth but not swallowed, and that it should be used after each meal for three successive days, then after breakfast only for not more than four days and then discontinued. The chewing of a little genetian root whenever a strong desire for tobacco appears is thought to be beneficial.

Dr. T. D. Crothers, Superintendent of Walnut Lodge Sanitarium for Drug Habits, prescribes the following: "If the desire for smoking is intense, compressed hops may be placed in the pipe and smoked for a few moments. If the desire to chew is prominent, use chamomile blossoms swallowing the fluids. Every now and then wash out the mouth with a weak salt-water solution. If the nervousness continues, buy some 3-grain lupulin (hop) tablets. Take two or three at a

dose, particularly at night. When the nervousness passes off their use can be dropped. Should the nervousness become distressing, have water, either hot or cold, poured from an elevation of several feet upon the spine so that the effect of the water may produce a quieting action upon the nervous system."

Observers state that as a rule from three to six weeks are required to eliminate the desire for tobacco. Much of course depends upon the thoroughness with which directions are followed as well as upon individual cases. Congenial society, healthful out-of-door exercise, plenty of properly selected food, daily baths, and simple remedies coupled with sincere desire will accomplish wonders for the ordinary cigarette-smoking boy. Those who have thus been relieved should not feel that they are immune to the attacks of future temptations. Cases of complete annihilation of former appetites are almost unknown. Relapses may be avoided only by constant vigilance and total abstinence. The most complete reform that can be accomplished seems to be relief of craving, but scarcely elimination of appetite. When once the habit has been contracted it leaves lingering desires long years after abandonment. We again of course are speaking only in general terms. Isolated cases are here and there reported of individuals who completely lost all desire immediately after discontinuing its use.

In some respects the smoking grownup is more difficult to reach than the youth; this condition is at least partly due to the prevailing opinion that the use of tobacco is much more disastrous to boys than to men.

Smoking adults not infrequently render valuable aid to anti-tobacco workers among adolescents, but almost invariably resent efforts directed toward their own reformation. A large percentage of smokers quite readily admit that the practice may be somewhat detrimental to them, but very few seem to understand the seriousness of the injury, and practically all of them claim smoking as one of the inalienable rights of free men. Herein lies the key which seems to furnish the best method of reforming the smoking grownup

In the first place, he must be convinced that the use of tobacco is not only injurious to his health, but that it is otherwise diminishing his chances for success. He must be shown that its use in reducing both his mental and physical ability considerably below normal, and that this kind of reduction, in matters of close competition, will commonly stand between him and success. The smoker seldom knows or even believes that he is laboring under reduced efficiency. Actual tests of endurance, both mental and physical, may be used to good advantage in convincing him of his condition.

In the second place, the smoker must be shown that it is not his inalienable right to do anything that is decidedly injurious to others; his freedom is limited to conduct that does not impair similar rights of those about him. He should be willing to admit that he has no right to implant undesirable predispositions in his children before birth, or to injure the health of those already born. He has no right to befoul the air of public places, and above all he has no right to induce children to follow his example. It is admitted every-

where, moreover, that children acquire the tobacco habit very largely through imitation, which, if true, places the responsibility upon smoking adults.

Many fathers abandon the use of tobacco almost solely because they do not want their sons to acquire the habit. It should plainly be manifest to any parent that he cannot successfully preach abstinence as long as he himself continues to indulge. Smoking-adults, who are not parents, should also be convinced of their responsibility in this matter.

Undoubtedly one of the most effective means of overcoming the tobacco habit is religious conversion. This is particularly true among the "Mormon" people, where full fellowship entails total abstinence. Before being admitted into the church, converts are taught the necessity of complying with this requirement. The writer is personally acquainted with scores of persons, who upon being converted, immediately abandoned the habit and have never returned to it.

For many years during the early history of the "Mormon" church, laymen regarded this regulation as advisory rather than compulsory, and, in consequence, the use of tobacco was not uncommon among them, but of more recent years, as the matter became better understood, a very large percentage of them have abandoned it entirely. New and old converts alike daily bear testimony to the strength derived through prayer and proper living. Many of them testify that upon being converted to the necessity of compliance, all appetite for tobacco immediately disappeared. The cleanly and wholesome lives of thousands of members of this

organization bear testimony to the effectiveness of religious conversion.

The matter of combatting the tobacco evil is a very serious and difficult one. Any concerted effort directed against the habit will be met by well organized opposition; the tobacco combine with its millions of money will not retreat without a mighty struggle. Then again, smokers themselves will be slow to abandon the habit, and youths will continue to acquire it. But the tobacco evil can and must be eliminated from the lives of all civilized and uncivilized peoples. The campaign to accomplish this must be a concerted and continuous one; and the reward will be far more than commensurate with the effort.

XXI

WOMEN AS AFFECTED BY THE TOBACCO HABIT

GIRLS SMOKING.—At first thought it may appear that an apology should be made for associating the female sex in any way with the habit of smoking, but in fact, there is ample justification for serious consideration of this phase of the tobacco problem. The gravity of the situation does not arise so much from the present prevalence of the habit as it does from future probabilities. Even at the present time, however, the practice of cigarette smoking among certain classes of girls is altogether more common than is usually known.

Cigarette smoking by women of the underworld is almost universal, and next perhaps come chorus girls and vaudeville performers. The matter of girls smoking upon the vaudeville stage should be regarded as a public menace, especially in view of the popularity of this type of amusement. It is true, of course, that in many of the better playhouses girls are not permitted to smoke before the public.

Aside, however, from the unwholesome example of these women and their influence upon many of the less substantial girls of the audience, marked injury is arising from another direction. The nature and popularity of vaudeville "stunts" induce adventurous young women in almost every community to join the "circuit", who after completing their contracts ordinarily return home. It is impossible even to approximate the percentage of such girls, who acquire the

cigarette habit, and who subsequently introduce it into their circles of girl friends, but observation seems to point to the conclusion that it is alarmingly large.

The mentioning of this condition is not intended to cast any aspersion upon the higher type of women, of whom there are at present many upon the vaudeville stage. On the other hand it is hardly necessary to state that this type of public entertainment is furnishing almost unparalleled opportunity for the ready moral destruction of giddy girls seeking adventure.

Recent evidence is pointing very unexpectedly to certain American colleges and universities as almost veritable hotbeds for the development of the smoking habit among girls. It seems to be particularly prevalent at institutions catering to students of the wealthier class. It is regrettably true that among such students scholarship is altogether too commonly subordinated to pleasure and self-indulgence.

It would seem that educational institutions would be the last places at which such a pernicious soul-destroying habit could be acquired. Education is designed for the training of individuals to live nobler lives. But it should be borne in mind that such institutions cannot mould men and women of high ideals from all of the material that at the present time is being sent them. In this day of popular education an altogether too large percentage of those in attendance are there largely for the purpose of having a "good time". It is from such students that institutions receive their principal annoyance and among such that objectionable habits commonly arise. Within the so-

cial class of students at colleges and universities cigarette smoking by men is becoming practically universal, and unfortunately certain types of girls when away from the restraints of home are beginning to follow the example.

But even more serious than all this is the glib familiarity in which almost every class of people is coming to speak of cigarette smoking. Within the last few years the consumption of this particular form of tobacco has increased enormously; this condition has not been brought about at the expense of other forms of smoking, for during the same period they have also more than held their own. Cigarettes are now being used by old and young alike. The air of the city streets is everywhere befouled with their odor. They are used in concert halls and public eating places. Even the sanctity of the home is invaded, where they are used both after the meal and between courses. No place seems to be too sacred for their entrance, and no people too rich or too poor for their consumption.

Wherever young women go they are enshrouded in the fumes of cigarette smoke and drawn into conversations dealing with the merits of various brands. Cigarettes are as familiar in almost every class of society as the air that is breathed. And unfortunately familiarity with them is destroying their repugnance and putting in its place a fearless intimacy.

Several years ago tobacco manufacturers began a very carefully outlined campaign of advertising, designed to familiarize the American people with this article. The great extent and variety of ways in

which this campaign was conducted can perhaps be partially imagined when it is recalled that a single company recently spent more than five and one-half million dollars for this purpose. Of late years tobacco manufacturers are scattering broadcast advertisements in which young women themselves are either smoking or are enjoying the company of their smoking companions. The day of advertising smokers as withdrawing from the presence of ladies while indulging is no longer with us. One can scarcely pass a billboard or pick up a popular magazine without seeing the picture of a woman in some way associated with the use of cigarettes.

Another source of increasing danger is the practice of certain supposedly respectable magazines of printing stories in which the heroines are represented as smoking cigarettes. If the stories were written true to nature and the heroines were shown in all their crudities, surrounded by their retinues of uncultured and commonly immoral companions, it would constitute no encouragement to respectable young women. But on the other hand, the heroine is pictured as the essence of refinement and culture, respected in society and loved by everyone. This class of advertising is much more effective in introducing tobacco into the lives of young women than all the combined straightforward announcements of billboards and street cars combined. Any magazine that will tolerate a story in which supposedly respectable women use tobacco should be eliminated from the home as an enemy of all that stands for American womanhood.

All this far-sighted advertising is having its weight. The object of not only making women familiar with cigarettes, but of destroying their antipathy for such is already pretty generally accomplished. We, of course, are speaking only in general terms, for there are many splendid women who are throwing the full weight of their influence against the advance of this calamity, but in the main this strenuous advertising has accomplished wonders in modifying public sentiment. There can be no doubt that women today are quite generally opposed to the tobacco habit, yet it is none-the-less true that their opposition is far less vigorous than a few years ago.

Young women of the present generation are necessarily almost as familiar with the various brands of cigarettes as are young men, for the names are constantly before them in magazines, in street cars and on public billboards. Added to this is the almost universal practice of young men smoking whenever and wherever they choose, a condition for which the young women are at least partially responsible. The unfortunate feature of the whole situation is that the familiarity is begetting carelessness, and unless offset by vigorous means, cannot but result seriously. If permitted to go on for another decade without resistance, one can scarcely tell where the calamity will end. The fact that already a considerable number of girls in various classes of so-called respectable society have acquired the cigarette habit does not argue altogether too favorably for the future. Any organization designed to combat this evil will do well not to under-estimate

the strength of the enemy which has behind it not only unlimited wealth but the courted indifference of a large part of the American people.

THE ATTITUDE OF GIRLS TOWARD SMOKERS.—Even if a young woman should admit that tobacco smoke is not offensive to her, no young man who has due respect for the sex of his mother would permit himself to indulge. Every young man who smokes knows that the habit is offensive. It is a regrettable fact that the use of tobacco seems to destroy respect for others, even for mothers and sweethearts. Condemnation can scarcely be too severe for young men, who, with or without permission, smoke in the presence of women. Andrew Carnegie said that he had always admired the attitude of the young lady who when asked if she objected to gentlemen smoking in her presence replied that she did not know, no gentleman had ever tried.

Young women will do well to bear in mind that just the instant they permit smoking in their presence they reduce themselves in the estimation of their young men companions. Young men admire girls who demand high standards. And in no case do they admire girls who are willing to submit to the fumes of a practice which the young men themselves know to be a filthy one. Admiration arises from a high regard for commendable qualities in others, and the instant these qualities are impaired just to that extent is admiration lost. Young men admire young women because of certain superior qualities, and, in consequence, any sacrifice of these qualities to the useless habits of others re-

sults at once in the loss of that admiration. No young woman should make the mistake of believing that she is encouraging the regard of any young man by permitting him to smoke in her presence.

It is probably true that certain classes of young men prefer being in the presence of girls who are willing to permit all sorts of indulgences and familiarities, but it is equally true that worthy young men are willing to make personal sacrifices for the young women they love.

The important point to bear in mind, however, is that young women can exert a powerful influence for good upon their young men companions, and that any failure on their part to do so may result in future unhappiness. Untold numbers of young men have been made better because of their high regard for young ladies, whose attitude on matters of right and wrong were absolutely uncompromising. Girls for their own sake, for the sake of the men they expect to marry, and for the sake of the family that is to follow, should demand right living in all matters touching habits and morals.

Again, no justification for the young man is thought of in the statement that young women often encourage the practice of smoking. But it is none-the-less true that women not infrequently directly encourage their husbands or sweethearts in this objectionable practice. It is by no means an uncommon occurrence for certain women to present their husbands with cigars, smoking gowns, humidors, pipes, and other accessories, or for young ladies to present their fiances with boxes of the

finest imported cigarettes. Girls altogether too generally have come to regard smoking as a kind of accomplishment, and in an unmistakable manner so conduct themselves. In public eating halls one can commonly see young women holding the lighted match for their companions' cigarettes, or fondly admiring the cases in which they are carried. Then again, there can be no question that some girls so place themselves that the smoke from their companions' cigarettes must pass in full force toward them. One does not need to walk many blocks in any American city to see girls who seem to be enjoying the smoke from their escorts' lips fully as much as do the young men who are smoking. While actions of this kind constitute no excuse on the part of young men, yet there can be no question as to the encouragement which they derive from such.

THE FUTURE HOME AND CHILDREN.—One can scarcely imagine that a young lady who will encourage or even permit a young man to smoke in her presence, has any adequate conception of the seriousness of the tobacco habit. Girls should not comfort themselves with the hope that their companions will abandon the practice after marriage; on the other hand, there is grave danger that even those who have discontinued its use before marriage will later return to it, for when once the use of tobacco has been fully acquired it is permanently discontinued only with great difficulty.

Smoking in a family means many things other than the mere act of burning tobacco. In the first place it means the befouling of the husband's person. There

is no reason that men's bodies should not be just as sweet and unpolluted as those of their wives. No man who comes home with tobacco-scented lips and breath can hope to retain the unstinted caresses of his wife. Regardless of the fact that she at first may love him implicitly, his unclean body will gradually alienate her from the home-coming kiss, and many of the finer things which make up married life.

And next perhaps to the unclean body comes the impairment of the social sense. The habit of smoking naturally leads men away from their wives and homes. While at home men of course commonly smoke in the presence of their wives or wherever they choose, but the habit itself calls for attendance at "smokers" and other places where associated practices are indulged in. If there is any question in the mind of any woman as to whether her husband thinks more of his tobacco or of her company, she need only go with him for a day's trip on a railroad or steamer. The average husband will remain away from his wife for hours at a time rather than dispense with his usual cigars. And still there are some people who will argue that tobacco in no way modifies home life.

Then again tobacco is known to reduce both mental and physical efficiency. During recent years of increased competition, men are succeeding or failing on very narrow margins. Business men are everywhere under the necessity of eliminating unnecessary losses and of dismissing employees who show elements of incompetency. There was never a time when small margins of superiority and inferiority counted for so

much. Large numbers of the most progressive business concerns are already refusing to employ men who smoke cigarettes. It is a well recognized fact that cigarette smokers make poor providers. While riches are by no means essential to happiness, yet poverty very commonly brings on the reverse.

From quite another point of view the use of tobacco in the home is conducive of sorrow. Physicians everywhere regard smokers as much more liable to the attacks of disease than are non-smokers, and also that they are far less capable of presenting sufficient resistance to overcome it. Life insurance companies already regard heavy smokers as undesirable risks.

If no one were affected by the smoking except the husband and wife, the matter might not be considered quite so serious, but the influence of the tobacco smoker reaches every member of his family. While it is likely true that specific diseases are not capable of being transmitted to the children, yet the consensus of opinion among high medical authorities is that children may readily inherit predisposition to disease. It would not be overstating matters to say that every prospective wife owes it to her children to ask herself whether they shall be well born. It certainly is apparent that if Deity requires of parents any one thing more than another, it is that children shall come into the world with healthy bodies and minds. Just how a parent can justify himself in imposing weaknesses upon unborn babes is impossible to understand. Mothers who are willing to sacrifice their lives for their children ought to see to it that their husbands are men who are willing to sac-

rifice all habits that may contribute to weakness and consequent disease among their children.

Then again, the mere act of smoking in the presence of children is now regarded as responsible for the beginning of a long line of ailments. It requires no exertion of the intellect to understand that a child will be directly injured by its father's smoking. Science has recently shown that even mature men suffer when subjected to the fumes of tobacco. There seems to be no question that various diseases, including nervousness, heart trouble, lung trouble, stomach trouble and even tuberculosis may be imposed upon children through being shut up in the befouled, stuffy, smoky rooms of their fathers' homes. And further, no mother need expect that a smoking father will not be followed by smoking children.

It would seem, therefore, that before any girl should marry a man who smokes, especially an inveterate user of cigarettes, she should count well the cost and be willing to make the sacrifice. She should keep well in mind that not only her own personal rights must be surrendered, but that even the health and lives of her offspring will be jeopardized. It scarcely seems possible that intelligent women would be willing to plunge themselves and their progeny into such a peril.

The picture is not over-painted. It is the story of the average family descended from a cigarette smoking father who acquired the habit in youth or early manhood. Such mothers and such families can be seen in every city and hamlet in America. Many of the emaciated and disheartened mothers of these families were

once the most light-hearted and attractive girls of the neighborhood. The writer can count among his own acquaintances more than half a dozen promising young women who chose to marry cigarette smokers, not one of whom could now be regarded as happy, and most of whom are decidedly unhappy.

Strangely enough, since the last preceding sentence was written a telephone call has been received from a young woman whom the present writer several years ago came to know through frequent visits at an out of town hospital. Her message was not an unusual one, but one that carries with it a lesson that every girl should have seared into her memory. Since her marriage of some six years ago she and her husband had been living an unhappy life, and recently she had come into the city with her three small children seeking employment. A girl who seven years ago was a competent hospital nurse had now called to see if an old acquaintance could find her some kind of employment in which her children would not be too much in the way. She announced her willingness to do any sort of work at which she could earn enough to take care of herself and her family of babies.

While in this case tobacco may not have been the immediate cause of the trouble, yet there can be no question that it was a strongly contributive factor. The young man smoked while courting the young lady, but did not seem to be willing to give it up—as a matter of fact he may never have been asked to do so. After marriage smoking became associated with drinking and both with immorality. The reader must not interpret

these statements as meaning that cigarettes are wholly responsible for the grosser vices, yet it should be borne in mind that those who use tobacco are much more naturally drawn into poolrooms, saloons and similar places than are non-smokers. As a matter of fact, non-smokers are always ill at ease in such places if for no other reason than the ever present fumes of tobacco. A man's attitude toward tobacco pre-determines to a remarkable extent the kind of company which he will seek. In many cases liquor follows tobacco almost as surely as one's presence in a smoking car is followed by tobacco-scented clothes. Abstinence from tobacco, on the other hand, is almost never known to be associated with indulgence in alcoholic beverages.

Marriage, undoubtedly the most important step in the life of any individual, is often entered with but little thought of what it may bring. Girls, who in matters of dress, education, business, and even homekeeping, exercise commendable wisdom, not infrequently accept life companions with no apparent thought of future probabilities. The average girl who becomes enamored by certain qualities in young men will proceed in a determined direction regardless of the advice of her best friends. Young women should rise to the exercise of that God-given quality which stands for higher and nobler lives. They should keep well in mind that their womanly virtues when properly used will act as mighty forces in impelling men to overcome undesirable habits. Happiness is the inalienable right of all self-respecting women, but without intelligent meditation on their own parts it is likely to be seriously jeopardized.

XXII

TOBACCO AND SPIRITUALITY

The use of tobacco strikes a telling blow at higher Christian ideals. The development of spirituality is based upon compliance with law just as fully and as naturally as is that of any other aspect of the human intellect. Strong spirituality does not come as the result of a day's right living, nor is it born of improper thoughts. It is the outgrowth only of continuous experience, and is inseparably connected with proper living.

The promptings of the Holy Spirit are not always easily understood, especially by inexperienced individuals. As a matter of fact, believers who pray for guidance are frequently unable to interpret the answer when it comes. They are not unlike average individuals who listen to the clicking of the receiver in a telegraph office; they are aware that a message is being received but of its meaning they are ignortantly uncertain. It should be borne in mind, however, that the promptings of the Spirit of God come in positive terms, but that they are not easily understood by the inexperienced.

Notwithstanding the teachings commonly advanced by Christians, it would be no more unreasonable to expect that an average man of the streets could properly interpret messages received at a Marconi station than that the same man could similarly interpret the

promptings of the Spirit of God. The wireless operator becomes efficient only through long study and practice. Attention to minutest details is inseparably connected with his training, and it is only after long experience that he can safely distinguish the niceties of the various messages transmitted to him.

And so it is with those who seek Divine guidance and who continuously and intelligently work toward the goal of higher ideals. The messages which at first may seem to be uncertain and indiscernable are gradually interpreted with absolute certainty.

Christians as a whole are open to severe criticism for the responsibility that they attempt to place upon Deity. They seem to think that after they themselves have once confessed their sins and have sought Divine favor that thenceforth the responsibility of their salvation rests upon the shoulders of the Master. They attempt to magnify the saving grace of God and to minimize the necessity of personal sacrifice. It is altogether too commonly held by Christians that penitents, who have signified a willingness to believe in Deity, can at once demand the full secrets of heaven. Entrance into the church organization seems to be regarded as assurance of salvation. Such an attitude is as wholly unjustified as that registration in an educational institution guarantees graduation.

In the Church of God, as in the school of science, the "entrance requirements" and formalities attending "registration" form a necessary and indispensable part of the work, but in either case these first steps must be followed by close attention to detail, the closer and the

longer the attention the more satisfactory will be the results.

Entrance into the Church of God, therefore, forms but the preliminary step to a life of continuous activity, and the degree of salvation that follows will depend primarily upon the faithfulness of the individual. No Christian is justified in believing that he can knowingly and willfully violate even the slightest of God's laws and be held blameless for such violation. Deity can have little regard for the loafer and the one who insists upon the gratification of perverted appetites. God's laws are just, and, in consequence, are applicable to all alike.

The gifts of God cannot be purchased with money; neither do they follow in the path of indolence and self-indulgence. They can be fostered and developed only by life-long lives of usefulness and progression. They come to the poor and the rich alike, and then only as the result of righteous living.

Spirituality is not in tune with the grosser things of life. The influence of the Eternal is not recognized by the undeveloped carnal mind. Just as electric waves from the wireless transmitter may pass by without being detected so may the whisperings of the Spirit of Deity. Ages elapsed before even the most highly trained specialists succeeded in, or even thought of, transmitting messages by means of electrical currents in the air. But of recent years it has been demonstrated that such currents do exist and that by means of highly specialized instruments they can be utilized for the conveyance of human thought.

Certainly no one is justified in believing that he can get in tune with the Infinite more easily than he can with the material things about him. It seems to be an external law that the finer and nicer things of life are understood only as the result of intense and accurate study. No one expects the careless man of the streets to be able to explain the complicated details of say X-ray photography, the understanding of which has cost the specialist years of application. It is a basic law of all educational work that the individual must submit himself to the rigorous consideration of a long line of fundamentals before he is able even to approach his ambitions.

Every progressive Christian, whether a new convert or one of long standing, constantly keeps before himself the task of eliminating deterring factors. One of the first things that the true Christian learns is that big things do not exist except as they are made up of little things. His life is characterized by constant overcoming. He does not hope to swing into Divine favor by a single act of heroism, nor does he lean too heavily on the popular Christian belief that death will free man from his sins and his sinful inclinations. He regards his duty as two-fold, first, to find out the laws of God, and, second, to obey them.

The human body, next to the human spirit, is without doubt the master work of Deity, and when it is so regarded, no Christian will permit himself to contaminate or otherwise abuse it. A vandal who enters an art gallery and besmirches beautiful paintings is looked upon as an enemy to civilization and punished

accordingly . Yet even among Christian leaders there are many who knowingly, if not wilfully, submit their bodies to all sorts of abuses and in perhaps the same breath ask the benediction of Deity upon their lives. It is not too much to expect that the Christian who believes in the fatherhood of God will instinctively respect the sacredness of his own body.

The use of tobacco and even alcoholic beverages among Christians is by no means unusual. Such acts are offensive to Deity, not only because they desecrate the works of His hands, but because they are actually repugnant to Him. No one would expect to retain the good will of a friend after persistently and knowingly desecrating his gifts. In order to make this matter clear one need only imagine the feelings of a generous philanthropist upon visiting a mansion that he had given to a friend, to find its most delicate parts marred and torn and its rooms filled with foul and offensive odors. An invitation to remain at such a place would certainly not be met with much enthusiasm.

Christians who desecrate their bodies commit far more serious offense than this. Their bodies are much more delicate and perfect than costly mansions, and the Spirit of God is incomparably more sensitive than is that of the philanthropist. Yet they knowingly persist in befouling their bodies and are simple enough to believe that Deity will send His spirit to dwell therein if they but ask Him to do so. It should not be difficult for Christians to understand that the Spirit of God will not dwell in unholy tabernacles.

It is of course known that under press of circum-

stances the Spirit of God may visit and work upon unclean persons. So do health officers and others engaged in tasks of reform. This sporadic visitation, however, cannot be regarded as companionship. The true Christian, by virtue of his right living, should be able not only to invite but to *claim* companionship with the Spirit of God.

Then again, the use of tobacco strikes directly at the development of spirituality through its depressant effects upon the brain. Tobacco first of all attacks the higher qualities of man, and because of this action its use by those seeking the higher life is particularly harmful. It would be fully as consistent for a student to take a depressant before approaching a problem say in metaphysics, or a switchman some irritant before going to his post of duty, as it would for a Christian to benumb his soul by the use of tobacco. It will be recalled that one of the chief claims made for tobacco even by its advocates is that it soothes the mind and banishes care.

The spirit of modern times is the spirit of efficiency. In every phase of commercial and educational activity deterring factors are being sought out and eliminated. Investigators are very generally coming to believe that even in the grosser things of life the use of tobacco is detrimental to higher standards. What then should be said of its effect upon man's spirituality, which is confessedly the most delicate and refined aspect of the human being? If a narcotized mind is impaired for work in solving mathematical problems, in making automobiles and in quarrying stone, then certainly

there can be no question of its deleterious effect on man's spirituality.

The censure contained in the following paragraphs is intended primarily for Christian leaders and others who profess to be living the higher life, and not for unbelievers.

That the use of tobacco constitutes a serious infraction of the laws of nature, and therefore of the laws of God, there can be no question. Individuals who wilfully violate law render themselves particularly liable to condemnation. It is common knowledge that in civil courts wilful acts are regarded as far more serious than those committed in ignorance. Justice would seem to demand that God will be more lenient with those who err ignorantly than those who knowingly sin. There can be no question that those who unknowingly violate the laws of God stand in far better position to receive Divine favor than do wilful transgressors. Preachers, teachers and laymen alike, who have grasped the genius of Christianity, know full well that Deity does not countenance violation of law even in the slightest degree. They also know that violation will be followed by just compensation.

In the face of such knowledge, wilful, violation constitutes almost a challenge of the supremacy of God, or if not, it places the violator in a position where he knows that he will sooner or later be confronted with his wrongdoings. Repetition of the particular offense forces upon him the conviction that he has but little claim upon Divine mercy, and with each repetition his power of resistance diminishes. This fear of punish-

ment and inability to avoid it causes the great majority of transgressors to argue against the justice and even the existence of Divine law, and to seek self justification for sins committed.

Spiritual impairment accompanying the use of tobacco, therefore, seems to be the result primarily of three factors: first, the actual deadening effect of tobacco upon the finer sensibilities of the human brain, second, the offensiveness of the habit to the Spirit of God, and, third, the knowledge possessed by Christian users that the use of tobacco constitutes a violation of the laws of God.

So far as actual observation can be made, the most serious results undoubtedly come as a result of the third. Progressive companionship with the Spirit of God requires progressive abandonment of sin, based upon a determination to eliminate deterring factors as rapidly as they become known. The earnest Christian cannot make any reservations as to his repentance and feel that he stands wholly right with God, and so long as he feels that he is deceiving God or his brethren he himself automatically limits his own progression. Lack of decision to abandon even slightly perverted appetites has been the determining factor in guilding multitudes of otherwise well-meaning men away from companionship with the Spirit of God. The writer in his own experience knows of scores of men who have permitted the tobacco habit to stand between them and the highest enjoyment known to man—close communion with God through his Holy Spirit

XXIII

MARGINS OF SUCCESS AND FAILURE

One January afternoon while engaged in writing a preceding section the writer looked from the window of his study and saw a fluffy, red-breasted robin nestling close in a corner of the building in an effort to protect itself against the cold of a driving storm. Between the more violent gusts the bird flew down and earnestly picked away at a fragment of bread which some one had thrown into the snow. The children of the household, who were called to witness the industry of the tiny creature, did not see nor could they understand the serious meaning of the situation. They saw only the bird covered with a warm coat of feathers and the cozy corner into which it could retreat when the storm became more violent.

But that was not the real meaning. To the bird it was a matter of life or death. Already the cold of winter and the accompanying scarcity of food had reduced the body of the creature to a mere shadow of its former plumpness, and even with its warm covering of feathers it was having serious difficulty in keeping itself from freezing, and, therefore, what the children looked upon as pleasant antics of the bird defying the snow and wind were serious efforts to offset starvation and death through cold.

The children did not understand that the beautiful creature just outside the window had but one chance

in five of surviving the perils of winter. They did not know that for each robin that lives through to spring, four others succumb to cold, starvation and disease. They did not know that the struggle for existence was so severe, in fact they did not know that the bird was having any struggle at all. Yet their ignorance made the situation none the less serious. Next morning the stiff body of a robin lying at the steps of the house gave mute evidence of the night's work.

The same kind of struggle is going on everywhere. There seems to be a universal law designed to place a premium upon intelligence and other ability to withstand the destructive forces of nature. There can be no question that among man and beast those who succeed in life are those, who, in the main, are the best prepared. To the bird this preparation may consist of a slightly superior intelligence or a slightly more robust body, and to man identically the same factors apply. It is quite probable that if the robin had possessed sufficient physical resistance to have lived through only one more night, it would have lived through the winter. It had already withstood the severest storms of the season and apparently lacked but a little more energy to carry it over to the warmth of approaching spring. Of the great army of robins that are annually subjected to the attacks of disease and cold, the few that survive are those that are *slightly* better prepared to overcome than are their unfortunate companions.

As indicated above, the robins, nor the whole bird family, are by no means the only creatures that succeed or fail by reason of the presence or absence of slight

superiority. It is a principle—nay a law—that applies fully as well to man as to bird. Success or failure, whether among birds or mammoths, barbarous or civilized men, cannibals or Christians, is predetermined by the degree of preparedness for the particular task in question. It is equally true that wherever competition arises successes are commonly won on *very small margins*. The more intense the competition the narrower these margins become. At the present time thousands upon thousands of young men are throwing the full strength of their vitality and ability into the educational lines of their choice, and, as a result, professional fields are filled with excellent men. The supply, moreover, is usually greater than the demand, and, in consequence, only the very best ones will succeed. Formerly, however, when but few went to college and when the whole supply was eagerly snatched up, practically every man, whether good or mediocre, made more or less success. Today competition places the laurels upon the brow of superiority even if the superiority be but slight.

In the matter of athletics, training is bringing about closer and closer competition. At the present time the world's record for the one hundred yard dash is held by Kelly at 9 3-5 seconds. There are literally hundreds of men who can run the distance in ten seconds. In the eyes of the athletic world, however, this group is not considered as belonging to the same class as the champion, yet *these individuals are but four per cent behind the best*. Furthermore, there are scores of men who have covered the one hundred yards in 9 4-5

seconds, but who have never been able to reach the championship mark. This group is *but two per cent behind the best and is still regarded as distinctly inferior.*

In our bigger educational institutions, where large numbers of men are "trying out" for positions on the football teams, the coaches not uncommonly experience serious difficulty in selecting the particular men to make up the squad. This is occasioned primarily by the large number of candidates and the excellence of most of the men. There are, of course, some who are dismissed at once, and then there are others who go out upon second consideration. The chief difficulty is encountered, however, in selecting the final squad. The coach may have under consideration the choice of men for the position of fullback, center, end or what not. He tries out the various candidates for several days or even weeks, meanwhile making accurate observation of each one's ability. Finally men are selected for the various positions, not because of their being vastly better than their failing competitors, but because of *slight margins of superiority.*

The greatest single copper mine in the world is located at Bingham, Utah. The ore deposit consists of a great intrusion of "porphyry" through which is disseminated a small percentage of copper. The ore is loaded by gigantic steam shovels into railroad cars, in which it is hauled in trainload lots to the mills near Garfield smelters some twenty miles away. Here the ore is finely crushed and passed over a series of "tables" where a considerable percentage of the "gangue" or

waste material is washed out. The efficiency of the "tables" depends upon their ability to get rid of the greatest amount of "gangue" and save the most ore at the lowest cost. At the time of their completion, some ten years ago, the mills were regarded as probably the most efficient ever constructed. Since then milling methods have improved, but only by short steps. Throughout the ten years there has scarcely been a single day when the mills have not been undergoing improvement by replacement. The management considers it good business to tear out costly machines, only to throw them into the scrap heap, if they can be replaced by others which will do the work even a very few per cent better. Any man today who can improve the efficiency of these mills by five per cent has before him an independent fortune, for by so doing he would save to the owners several thousands of dollars per day. Miners and millmen are not looking for individuals who are many times more efficient than their present employees. *A very few per cent superiority is sufficient to guarantee success.*

Life insurance companies use as a basis for the computation of premiums, certain expectancy tables derived through long experience in the study of mortality. Through a desire to make the company safe, and at the same time the policies attractive, the officials are under the necessity of computing on narrow margins. The force of this statement will appear when it is recalled that the premiums charged by various companies on similar insurance are nearly identical. Now, if experience should prove that the death rate of human

beings suddenly and permanently increased as little as five per cent, the integrity of practically every life insurance company in the world would be placed in jeopardy. Or on the other hand, if the premiums were unnecessarily increased by five per cent the earnings of the companies would become comparatively great. The point of value here is that insurance companies, dealing with policies mounting into millions, balance their very existence, and that safely, upon very small margins.

The banking business of the world is likewise based upon narrow margins of safety. Most Western American banks pay four per cent interest on time deposits, and charge eight per cent on loans. The difference, therefore, between what they pay and that which they receive is four per cent. Banks of course have other sources of income, and they also have other items chargeable against them. If any banking institution in the land should continuously fail to collect as little as five per cent of its outstanding accounts the law would very soon close its doors.

The whole field of legitimate investment is based upon margins similarly small. Stocks that safely yield say eight per cent on the investment are considered good, while others yielding say only four per cent are comparatively unattractive. Or again, an individual ventures into some relatively safe mercantile business, and later disposes of his interests. In case he receives his principal and say eight per cent annual interest on his investment, he would regard the venture as not unsuccessful, while if he received his principal and say only four per cent annual interest, he would undoubt-

edly feel that he could have done far better elsewhere.

The fact should not be lost sight of that closer competition invariably cuts down the margins of safety. The earning power of money, which in the main is the basis of all commercial investment, is lower in eastern than in western cities. When crops are abundant, only the best material is sold, and when poor, high prices are paid even for inferior articles. When work is plentiful any man can get a job, but when it begins to fall off, the men are discharged in the order of inferiority. The hurry of modern times is bringing on increasing competition. The time when men, who were jack-of-all-trades, could succeed is rapidly passing. The work of today calls for specialization. It calls for well-trained men. Efficiency engineers are employed by nearly every big institution. Only recently such a man showed certain workmen how they could improve the grade and quantity of their work by properly placing the tools and material on the benches before them, and because of this change the factory was enabled to meet the prices of a hard pressing competitor.

Perhaps no term in the English language has been more widely used during the past five years than the term "efficiency". Every successful educator, banker, merchant, manufacturer, farmer, stockman, philanthropist and even Christian is now turning the searchlight of efficiency inwardly upon his work. They all know that if they continue in existence they must be able to meet the demands of the oncoming wave of closer competition. One notable and very commendable way in which employers are trying to meet

this condition is by more carefully looking after their employees intellectually and physically. Night schools for workmen are being opened. Better sanitary conditions are being provided. The health of the employees is being more carefully guarded, both by free medical treatment and by timely instructions.

Several years ago the business world gradually came to regard workmen who indulged in the use of alcoholic beverages as inferior to abstainers. At the present time it would be difficult to find scarcely a single heavy drinker holding a position of trust. The drinking workingmen of today occupy positions of but poor remuneration and of but little importance.

It requires no prophetic vision to state that tobacco must go next. Already the voice of the employer is being raised against it. It is true that the outcry is made principally against the cigarette, but that is primarily because of the greater injury accomplished by this particular form. The warfare against the use of tobacco has begun and will not cease until every individual who insists upon reducing his efficiency by using it will be under the necessity of performing only the menial tasks of life. When such men as Henry Ford, Thomas A. Edison, and scores of others, who employ thousands of men, refuse to hire cigarette smokers, the campaign may be regarded as well upon its way.

Recently a young man, who uses cigarettes freely, came to the office of the present writer and in the course of the conversation finally explained that he had become interested in the investigations relating to tobacco and wanted to know if he might have access to

some of the findings. He was given copies of the investigations by Meylan, Clarke, Pack, Bush and others. After spending an hour or so upon them he suddenly ejaculated, "Well, I do not see anything serious in this matter. The smokers in no case seem to be more than about ten per cent inferior to the non-smokers and in several cases not more than five. Such a slight difference is not worth worrying about."

The young man was simply giving expression to a very widespread popular fallacy. For some unexplainable reason, tobacco users everywhere refuse to believe that the habit is injurious unless the results are blatantly glaring. No man seems to be willing to admit that tobacco is injuring his heart or his eyes until pronounced palpitation arises or until the specialist informs him that the optic nerve is partially atrophied. He sees no harm in the habit until the insurance company refuses to accept him because of excessively high blood pressure or until he becomes so nervous that he cannot attend to ordinary business affairs without a cigar in his mouth.

Strangely enough, many of these inconsistencies come from business men who know positively that success and failure are separated only by very narrow margins. They have learned that business efficiency consists essentially in taking care of seeming trifles. They are necessarily familiar with the fact that competition requires close attention to details, and, furthermore, that the closer the competition becomes the narrower are the margins of safety.

It is just as ridiculous for the average man to assume

the attitude that tobacco is doing him no harm as it would be for the merchant knowingly to permit a leaky roof to destroy ten per cent of his stock, and then to insist that it was doing him no harm until the sheriff pounded at his door and awakened him from his lethargy. The comparison, moreover, might be restricted to the most prosperous merchants and to the most staple articles upon their shelves, for it is now known that the use of tobacco, even among the very best men of America, is accompanied by a marked injury to such vital organs as the heart, lungs and kidneys.

The average cigarette smoker must not deceive himself into believing that the findings of college and university investigators apply to him, because they do not. He belongs to the class that failed out in the grades or high school, and who never saw the inside of a university building. In mentality, the average cigarette smoker is thought to be at least fifty per cent inferior to the average college student. It will be well, therefore, in interpreting the results of these investigators to keep in mind that they apply to the more intellectual type of men who have had sufficient courage and stick-to-itiveness to carry them toward higher ideals, and not to the average cigarette smoker of the street. Authorities are everywhere agreed that boys and young men who acquire the cigarette habit early, and subsequently remain away from school, have practically no chance whatever to succeed in life.

Now, as to those who do not begin to use tobacco until well toward manhood, and, who in consequence,

are not so seriously handicapped: Investigations in colleges and universities, relative to these men, have universally shown that they average from five to ten per cent poorer than their non-smoking companions, both with respect to mentality and physique. If any man in this class should doubt that his five or ten per cent inferiority is not a serious handicap in his life's battle for success, he will be under the necessity of explaining why the laws of nature have made an exception in his particular case. Bankers and life insurance companies, miners and metallurgists, athletes and merchants measure their successes and failures on margins equally as small. Nature itself, through the operation of unbiased law, marks with success those who are even minutely better equipped than their competing companions. It would be well for the tobacco user to explain why the laws of the universe should make an exception of him.

XXIV

THE MASTER MAN

Recently the present writer was engaged to make an examination of some springs from which it was hoped sufficient water might be developed to supply certain state institutions. During the course of the investigations it became necessary to cut several deep trenches in the vicinity of the springs for the purpose of revealing the geological structure. The laborers for this purpose were provided from among the prisoners at the state penitentiary. Day after day as the work was being prosecuted, the writer had the experience of mingling with the prisoners and talking with them about various matters. As acquaintance with these men became more familiar the fact seemed to be emphasized anew that they constitute no separate class of beings but are simply ordinary individuals gone wrong. Some of them spoke of their mothers and some of their wives and children. Some were old men, evidently caloused by years, and some were young men scarcely more than boys. Each one, however, had offended the law, and, in consequence, had had his liberties curtailed. They no longer appeared as individuals with names and personalities, but as so many things each of which responded to a number. Manhood, individuality, initiative, independence and practically all that go to make up character had been sacrificed because of offense. Even the greatest gift of God to man—the intellect and

freedom to use it—was of little service here. At the command of guards each one came and went as he was told. They were in reality mere things moving about in the form of men.

At one time during the progress of the work, one of the men—for such they are except that they have forfeited the right to act as such—walked a few yards away from his fellow-convicts for the purpose of obtaining a drink at a point in the stream where the water appeared especially clear and inviting. At the command of the guard, however, he returned to the group and drank where he was told to drink.

The full seriousness of the matter was then borne in on the present writer. There before him were human beings, brothers in the great humanity of man, who could not act as they chose to act, walk where they wanted to walk, or drink where they wanted to drink.

The night, after the completion of the day's work, these fathers, sons and husbands were ordered into the prison wagon and hurried off to stone walls and steel rooms. The writer wandered slowly homeward across green fields richly decorated with the flowers of spring. At a certain point the meandering path divided, one part extending through a thicket of wild roses and choke cherries and the other over a hill sparsely covered with mountain sage. For a moment the writer halted in indecision, and then climbed the hill where a full view of an incomparable mountain valley spread out before him. The sun which had just gone behind the distant mountains was tinting the clouds with a thousand colors. The great Dead Sea of America

spread its waters in the western distance, while immediately at the eastward the Wasatch mountains, with all their grandeur, towered far into the sky. And there in the presence of nature only, inspired doubtless by the experiences of the day and the glories of spring-time, the writer uncovered his head and thanked God for the freedom he enjoyed and for the great principle of liberty intended for the enjoyment of every living soul. Then with what seemed to be a new conception of the value of mastery and freedom, in contrast with servitude and bondage, he hastened homeward.

Unfortunately there are a great many human prisoners other than those who have violated the civil law, and who are just as effectively enslaved as if locked behind doors of steel. It is probably true that violation of the laws of health produces more prisoners than any other single cause. The reasons for such violation are, in the main, attributable to ignorance, carelessness, and outright indifference. Education in its broad sense will gradually offset these enslaving agencies and man will liberate himself from all subordination.

A little thought will make plain the fact that man is intended for mastery. His superiority over all other forms of life is evidently not due to his physical strength and endurance, for almost countless others are more enduring, more active, and stronger than he. Stripped of his intellect, and possessing only brute force, he would be compelled to retire before the advance of his animal competitors. As he is, however, the most ferocious and powerful of the animal kingdom concede to his will or slink away at his coming.

Man's mastery is by no means limited to the animal and plant worlds. He is already beginning to realize his embryonic mastery of the entire physical universe. Year by year, as his intellect is developed, his domain of control is spreading out in ever increasing circles. Only a few years ago his most rapid means of locomotion came as a result of his subjugating certain animals; now he traverses the land, sea and air in machines of his own ingenuity. Scarcely more than a memory back he talked only with those who were near enough to hear his voice; now he converses at ease with those across land and water thousands of miles away. At one time he exercised control over physical things only to the extent of his own animal strength; later he compelled other animals to do his work for him; then he learned to utilize the latent heat of wood and coal; and now he is controlling the law of gravity and transmitting the energy of streams to distant points at will. All of this, and much more, has come through a partial development of his innate mastery of the physical world.

The advance of science creates nothing new. Discovery and invention simply find out laws and combinations of laws that have ever existed, and subordinates them to the will of man. Education consists essentially of an acquaintance with and control of law. Man's future development will unfold at precisely the same rate as his mastery increases. His present field of control is bounded by the degree of his ignorance. For the man who is willing to work and to apply the results of his findings, the future holds out absolutely no limitations.

The present condition of man's ignorance, and consequent servitude, is primarily repsonsible for all of his sorrow. Poverty, disease and death come as a result of his lack of mastery. His helplessness is well shown when the consulting physician turns from the bedside and says that nothing more can be done, or when the farmer daily watches his fields of grain as they turn brown and wither for want of rain. Yet man is gradually becoming master, and just as he has already stayed the advance of certain types of disease and drought, so will he go on eternally conquering in the future.

Among men there is as wide difference between individuals as there is between the prisoner and the freeman. One is tied hand and foot by ignorance and personal indulgence, and the other is gradually acquiring mastery of law and self. One is satisfied with his present conditions, while the other is incessantly working for improvement both of self and others. There is as much difference in the ideals of these men as there was between those of the contented southern slave and the ambitious northern freeman.

The development of mastery first of all begins with self. Individuals who cannot control their own appetites, passions and impulses have yet to learn the rudiments of personal freedom. Self-restraint of course plays an important part in the life of every civilized being, but altogether too commonly this restraint is exercised because of fear of law, of public opinion or of sickness. Such individuals are not masters because of right, but because of fear.

No man appreciates the full meaning and power of himself unless he is constantly striving for greater freedom: The man, under normal conditions who cannot compel himself to refrain from wrongdoing and to work for the right, is not learning the lesson of human worth. Neither is the man free who permits himself to indulge in fits of temper or to pamper abnormal appetites. The master man, who says to himself do thus and so, and then sees that the command is obeyed, has started well on the road toward the mastery of other things. His success will be limited only by the ages through which he labors, and his glory, like that of God, will come as the result of the intelligence he thus obtains.

The individual on the other hand who obeys the commands of morbid appetite or sensuality is, to that extent, just as completely bound as the prisoner in the cell or the slave in the field. He has permitted the grosser things of life to overcome those that characterize manhood. He has encouraged the carnal traits to dominate the eternal. His slavery, if continued, is just as certain to lead to decline, disintegration and dissolution as is the slavery of a tribe or nation. Success is as difficult to obtain under such conditions as under the lash of the driver's whip.

The principle of tribal and national liberty has perhaps cost more effort and bloodshed than any other principle involved in human history, yet the real significance of personal liberty does not yet seem to have been comprehended by the masses. Men who would be willing to sacrifice their lives for the obtaining of social

and political freedom, very often permit themselves to become personally enslaved by habits and vices fully as destructive as the slave-holder's yoke. Opium fiends and alcoholic inebriates are pronounced examples of drug slaves. In both mind and body they are prisoners to perverted appetites. During moments of more serious thought they may determine to master themselves and cast off the enslaving vice, but sooner or later the higher resolves are suppressed and again animal nature rules.

One of the most splendid gentlemen and husbands the writer has ever known permitted himself to become a slave to the liquor habit. He cared for his wife, who had been confined to her bed for several years, with all the tenderness due an infant. His business associates regarded him as absolutely reliable and truthful. He himself entertained a very strong desire to overcome his depraving habit and to return to his former manhood. When the desire for drink would seize him and he was being overcome, he would leave his home on a long detouring trip for the liquor hall, but upon approaching it the better man within him frequently enabled him to pass it by. Detour after detour, however, universally brought him back and forced him into the door of his downfall.

Slaves to habit seem to be of three kinds: those who have no desire to overcome, those who desire to overcome but cannot, and those who desire to overcome and can. The great mass of slaves seem to belong to the first and second classes.

Students of the tobacco problem quite generally

agree that the mass effects of this habit are more destructive than alcohol. The wide extent of harm accomplished by tobacco is without doubt largely due to the indifference in which the public regards it and the great number of high class men who permit themselves to use it. Experts in the treatment of alcoholism declare that many patients can give up their liquor much more easily than their tobacco.

Most tobacco users deny the existence of any slavery to the habit; the denial, however, is much more commonly made by young smokers than old ones. Almost every young man will declare that he can abandon the habit at will, but older men are seldom if ever so positive, a condition probably due to the fact that the younger men have never tried and the older ones have tried and failed.

Anti-tobacco workers the world over are turning their attention from the matter of cure to prevention. Their united testimony is to the effect that the great masses either do not care to abandon the habit or do not possess sufficient self-control to do so. The indifference these workers encounter, in their labor of conversion, is equalled only by the inability of converts to make good. They have learned that the great mass of smokers are content with their condition, and that of those who try to abandon the habit only a small percentage are finally successful.

The general belief, on the part of many smokers, that they are free to leave off the habit whenever they choose is pretty well illustrated by a recent experience of the writer with a prominent engineer. The engineer

used tobacco and used it excessively; in fact from morning until night he was scarcely without a cigar in his mouth. During a conversation something arose concerning the habit and the difficulty of abandoning it, but the engineer, while admitting that he smoked freely, announced with some emphasis that he would never permit himself to smoke after he felt that its use was becoming a fixed habit. Shortly, however, after unexpectedly being away from the city for several days, the supply of tobacco gave out. Hourly the engineer became more and more irritable, and finally so much so that he was almost incapacitated for the work expected of him. To him everything seemed to go wrong. After some considerable exertion and loss of time, however, he succeeded in securing a new supply from a neighboring mining camp, and then he quickly returned to his former self. Yet he insisted that he was master of the habit.

Extended arguments going to show that the use of tobacco enslaves its users are wholly unnecessary. Every habitual smoker who is fair with himself knows full well the power which the habit has over him. Some men, of course, are able to abandon it much more easily than others, but not one man out of a thousand is able to play with tobacco and remain immune to its subjugating effects.

In other sections of this work it has been shown that tobacco attacks practically every vital function of the human body, but aside from all this, its *mastery of man* is alone quite sufficient to condemn it as his enemy. At first thought the destructive influence which tobacco

thus exerts upon its adherents may appear to be but slight. There is, however, an almost incalculable distance between the master man and the servant man. One is aware of the divine embryo within him, which, if cultivated, will lead him into endless mastery of universal law. He understands that his progress is limited only by the efforts which he himself puts forth in finding out the great unknown. He regards nothing as unknowable and uncontrollable, and never weakens at what to others appear to be impossible tasks. He recognizes no great flights or royal roads of personal indulgence leading to ideals. On the other hand, he knows full well that the final goal of human perfection—human mastery—can be reached only by small steps, each one carved out by personal achievement, and, in consequence of this knowledge, he measures his daily advancement by his daily accomplishments. He practices personal stock-taking and regards no defect, no matter how small, as inconsequential in his success. He believes in the spirit of mastery and cultivates it by continuously overcoming difficulties both personal and universal.

The other man is not aware of the slumbering principle of eternal advancement and universal mastery latent within him. He permits indulgence, because it brings temporary pleasure. He seldom takes stock of himself, and regards slight infractions of the laws of nature as of no consequence in the final achievements of life. He loses sight of the fact that big things are made up of little things, and, again, that his advancement depends upon his personal efforts. If he is a re-

religious man he expects Deity to erase his imperfections without any act on his part other than believing. If other than religious he indulges himself for the attendant pleasure and thinks but little of the future.

It can very truthfully be said that the man who has not as yet learned of the master spirit within him has not as yet learned to live. The man who is still bound by the perverted impulses and passions of his body is just to that extent still animal, and the man who cannot restrain himself under the attacks of temptation is not far removed. The master spirit in man characterizes him as pre-eminent among the animal kingdom. That he will eventually become master not only of the laws of the earth, but of the universe, will be admitted by all who are familiar with his ability to progress. Those who believe in the eternal spirit of man think of him as ever improving beyond the grave, and those who regard death as the end will look to succeeding generations for a continuation of his work. Man will reach relative mastery just as fast as he gains knowledge and puts that knowledge into operation.

XXV.

TOBACCO AND OUR SOLDIERS

In the judgment of students of the matter no greater imposition has ever been thrust upon the American people than the recent effort to narcotize our armies. The campaign was started just at the moment when our hearts began bleeding for the welfare of our boys and before we had had time to look the problem squarely in the face. Simultaneously nearly five hundred newspapers from the Atlantic to the Pacific launched the campaign almost as secretly and as swiftly as a modern warfare surprise attack. The American people were told of the great need of tobacco by our boys "over there". They were told of the difficulties of obtaining "good" tobacco and of the distress occasioned by its absence. They were told of the "actual benefit" derived from its use. One article even stated that "Cigarettes help to steady the nerves of the American soldiers in the French trenches who manipulate the difficult anti-aircraft guns. The steadier the nerve of the man behind the gun, the more of the enemy airplanes brought down." And then these various newspapers appealed to the American people to send abundant quantities of "American" tobacco to our boys.

And, strangely too, a great many of the American people responded. Well-meaning men and women from one end of our country to the other regarded it as their bounden duty to do everything possible for the

welfare of the men who are so valiantly offering their lives for the good of those who remain at home. And as a result almost untold quantities of tobacco were unstintingly paid for in every section of the country and forwarded to our boys in France. At first the campaign urged simply that the pipes of the soldiers be "well-filled for Christmas", but since then it has gone on just the same and is still going.

The advertising matter for this campaign had been so well prepared and the whole plan so well laid, and launched at so critical a time, that the loyalty of the American people permitted them to be swept completely off their feet. The pathetic "stories" told of the soldiers in the French hospitals who were suffering more for tobacco than for medical care, caught the responsive ear of thousands of our staunchest citizens who are normally opposed to the use of tobacco. They agreed, and perhaps properly, that if our boys were suffering for tobacco and if it would be of any real service to them, then they ought to have it.

But since the first few weeks of the tobacco campaign very many of those who at first were favorably impressed, have seen clearly the duplicity of the measures employed. It is now a generally accepted belief that behind and beneath the whole campaign are prominent companies that have tobacco for sale. In fairness, however, it should be stated that there are still many disinterested persons who believe in the advisability of sending tobacco to the soldiers.

In answer to this monster imposition it can scarcely be expected but what the American people will some

day rise up in their dignity and deal seriously with the companies and individuals who have taken advantage of our broken hearts for the purpose of making personal gains.

The matter that immediately confronts us, however, is the harm that already has been done, and the method of combating it. Tobacco manufacturers are well aware of the fact that when once a young man begins the use of tobacco he seldom abandons it. They had in mind the same fact when several years ago they gratuitously distributed cigarettes to the Chinese people who were just then attempting to free themselves from the opium evil. And in their Chinese venture they were not disappointed, for the annual toll now paid by these unfortunate people is collected as surely as if levied by a federal government. And again, the American tobacco companies undoubtedly had the same fact in mind when they recently set aside nearly six million dollars to be spent for advertising during a single year. Our foremost authorities are convinced that when the tobacco habit is fully acquired it is abandoned with even more difficulty than the liquor habit.

And so those who are fostering the campaign to narcotize our armies may properly feel even now that their efforts have been very successful, for already hundreds and thousands of young men who had never smoked before entering the army, are now regular users. With their perfect knowledge that when a young man once smokes he seldom abandons it, their satisfaction must be the more complete.

There can be no doubt, therefore, that a great deal of injury already has been done, and unless the American people, and perhaps the American Government, rise up and oppose the advance of this peril it will soon seek to infest every soldier in our great army.

The arguments set forth in favor of sending tobacco to our soldiers have been designed to appeal to every phase of human emotion, and, unfortunately, it is not too much to say that practically every crucial argument is based primarily upon misrepresentation or actual untruth. The purpose of the entire campaign has been to convince the American people and the American armies that tobacco is of actual service to the soldiers and that it is our duty to send it to them.

Now, in the first place, there is not the faintest fragment of scientific proof that tobacco is of service to human beings. Not a single investigation has ever indicated, even in the slightest degree, that tobacco improves the normal activity of either body or mind. But on the other hand, scientific investigations are absolutely unanimous in announcing that the use of tobacco is invariably accompanied by reduced efficiency both mental and physical. Yet, in spite of these findings, tobacco vendors have announced in glaring headlines to the American people that our soldiers need tobacco and must have it.

There is not the slightest room for controversy in the matter. Athletic coaches universally assert that the use of tobacco and physical activity are invariably incompatible. And in an intellectual way, not a single

educator in the world would be willing to argue that the use of tobacco enhances mental acumen.

Scientific investigation has shown that the evil effects of tobacco are not confined to individuals of weak constitutions, but that they reach all users, no matter how robust they may be. It has recently been shown that the very best men of the nation, such as those comprising the college football teams, suffer severely through the uses of tobacco. No one is immune.

In the present connection some experiments just reported by Dr. George J. Fisher, who heads the Department of Public Health in the National Y. M. C. A., are of timely interest. Doctor Fisher's own general summary of his findings will perhaps serve our purpose:

"For the past four years I have had a series of experiments made at the Y. M. C. A. College at Springfield, Massachusetts, under the direction of Professor Elmer Berry, upon young men between the ages of twenty-one and twenty-five, men of exceptional physical vigor who were being trained as physical directors. The plan in the experiments was to use smokers and non-smokers alike so as to note the effect of smoking on each, to have them go through a given test first without smoking and then try the same test after smoking. As a rule we used a single cigar or a cigarette.

"In our first experiment we tested the effect of smoking a cigar on the heart rate and blood pressure. A single cigar increased the heart rate and blood pressure. A most significant thing about this experiment was the apparent disturbance to the heart in that it took some

considerable time for the heart to return to normal, longer than we could wait to measure.

"In the next experiment, a year later, we tried to go into this problem further and gave a series of exercises before and after smoking, taking as before the heart rate. This series of tests revealed, as did the others, that smokers have a higher heart rate than non-smokers and that the return to normal after exercise is much delayed after smoking. For illustration, in 74 out of 118 smoking tests, or 62.72 per cent, the heart rate was increased and did not return to normal in fifteen minutes. In 72 out of 74 tests in which the men did not smoke fully 97 per cent did return to normal in less than fifteen minutes, the average time being only five minutes. The smoker does not become fully habituated to smoking.

"At the same time that the latter test was given some tests in muscular precision were made by having the men draw lines with a pen on a chart between narrow columns. Every time the sides were touched an error was registered. To test the large muscular co-ordinations the men were required to lunge at a target with a fencing foil. In these two tests all the men showed a loss in precision. This was a great surprise to us. I did not dream that a single cigar or the smoking of two cigars which were used in the target thrust would show any appreciable effect.

"This led us in our next experiment to make some experiments on the effects of smoking upon baseball pitching. Twelve men, all baseball players, both smokers and non-smokers, were used. The men in the

tests had ten throws at a target which were recorded. Then each thrower smoked a cigar, taking thirty minutes for the purpose, after which they had ten more throws which were recorded. In another test the men rested in the thirty minute interval instead of smoking. In another test the men smoked two cigars, using sixty minutes between the throws. In this way it was clearly discovered what effect resting, or smoking one cigar, or smoking two cigars, had upon accuracy in pitching. An official baseball was used. Fast, straight balls were thrown, the men winding up for the throw as baseball pitchers do.

"In Test A, after smoking one cigar, there was a loss of twelve per cent in accuracy. In Test B, after smoking two cigars, there was a loss of fourteen and one-half per cent. In Test C, during which no cigars were smoked, there was an increase in accuracy of nine per cent, so that the real effect of the smoking should be judged by comparing the scores made after a rest and those after smoking.

"We then determined upon a further test of co-ordination and because of the interest in the war we selected rifle shooting. The Wesson Revolver Club Range of Springfield was used and Mr. Wesson furnished rifles and ammunition. Five shots at a target twenty yards distant were fired, then either a rest or a smoke was indulged in, then five more shots were fired. The prone position was used. Five tests were made in the first. Briefly the results were these: In test number one, when the men did not smoke, they showed an increase in accuracy of seven per cent. In the second

test, after smoking one cigar, there was a loss in accuracy of four and eight-tenths per cent. In the third test, in which the men smoked two cigars, there was a loss in accuracy of six per cent. In the fourth experiment, after smoking two cigarettes, there was a loss in scoring of one and eight-tenths per cent. In the fifth experiment, in which the men did not smoke, there was a gain in accuracy." The gain was 13.2 per cent.

Very briefly stated then, it has been shown that the use of one cigar is followed by an increase of heart rate; that it delays the return of the heart to normal (after exercise) to more than two and one-half times its natural period, or, in other words, that the heart of the smoker requires two and one-half times as long to become normal (after exercise) as does that of the non-smoker; that it destroys the accuracy of finer muscular control by nearly 25 per cent, and of more violent physical precision, such as thrusting a foil as in fencing, by practically 10 per cent; that it decreases the accuracy of throwing by 20 per cent, and that it destroys precision in rifle shooting by fully 12 to 15 per cent.

It will be well for the reader to remember that the men involved in these experiments were all young men of the athletic type and far superior physically to the average American soldier.

Another point of great interest brought out by these experiments is that the ill effects following the use of tobacco are just about as marked in the case of habitual smokers as in the case of those who have never used tobacco before. It would appear that the human body

never becomes accustomed to the use of tobacco, even though the user may think that it does.

The results of these experiments have a deep meaning when applied to the American army. After being admitted to enlistment the average soldier is kept for months under strenuous training before he is permitted to go to the front. During this period he is put through a wide variety of physical gymnastics. His food is selected with the greatest care and his living quarters are maintained in harmony with the most highly approved sanitary measures. In other words, no effort is spared to make him just as nearly physically perfect as possible. Yet the American people are being urged to send an agent to him that will reduce every phase of his efficiency as a soldier.

Aside from the fact that the use of tobacco strikes a telling blow at the soldier's nerves and his general accuracy while in action, it robs him of the vitality necessary to combat disease. It is no wonder that smokers, with fully ten per cent of the lungs destroyed, quickly succumb to the ravages of pneumonia and tuberculosis. It is reported that already more than 100,000 men have been dismissed from the French army alone because of tuberculosis, and surpassing this number by far is the great army that already has died of pneumonia. Army physicians are unanimous in reporting that the use of tobacco increases the death rate from practically every type of disease to which our soldiers are subject.

In view of these facts it scarcely seems possible that the American people would knowingly permit the entrance of an agent into the army that will unquestion-

ably reduce the efficiency of every man who uses it. Yet this is precisely what is being done in the case of tobacco. If an agent of Germany were discovered in any act whatsoever that tends to the reduction of our army's efficiency he would sternly be dealt with. In view of the irreparable injury being done to our army it might almost be suspected that the campaign to send tobacco to our soldiers was conceived and financed by the enemy. The Kaiser today has no greater ally among the American soldiers than tobacco.

For the past four years the great armies in France have been in a condition of dead-lock. Neither side has made decisive gains, and at present the two most efficient armies the world has ever known are so evenly matched that vital movements seem to be impossible. Immediate, overwhelming defeat on the part of either side is wholly unlooked for.

There can be no question that eventually the war will be won on small margins of superiority, and to this end the American people are now bending every effort. No one will dare to contradict the statement that if the armies of the Allies could go forth equal to their opponents in every respect, and superior to them to the extent of say only ten per cent in endurance, in resistance to disease, in recovery from disease and accident, in recuperation from fatigue, and in marksmanship, the great war would be terminated within a very short time. And it is equally true that no one who is really familiar with the matter will deny that abstinence from tobacco would bring about this superiority.

It has been argued in some quarters that the old

smokers of the army would suffer greatly if they were deprived of their tobacco. It will be recalled, however, that Doctor Fisher has shown that habitual smokers rapidly improve almost immediately after discontinuing its use, and that they suffer practically as much as non-smokers when they resort to it.

It certainly would be a sweeping measure to demand that all the habitual smokers of the army give up their tobacco, and it would undoubtedly here and there entail serious hardship. But the great war has brought on trials and hardships, and they are reaching every American citizen. We are now cheerfully submitting to "regulations" and "restrictions" which under normal conditions would be almost offensive to our ideals of personal liberty. But freedom must be made safe, and every agent that stands in the way of our preserving it must, at least temporarily, be set aside. If men make better soldiers without tobacco, then for the sake of their country they ought not to smoke.

But the matter of old smokers abandoning the use of tobacco is not nearly so vital as that of preventing others from acquiring it. Hundreds and thousands of the young men now entering the army have never used tobacco in any form, but the plan of supplying it free to the soldiers and of encouraging them to use it, places a serious temptation in the hands of every one of them. Up to the present time there is probably not one man in our army who has not been tendered the free use of tobacco. For the sake of the thousands of young men who are yet to go to the defense of freedom, the American people should no longer tolerate a campaign that

will unquestionably reduce their efficiency as soldiers and their chances of returning home.

Certainly it would be a great monument to American patriotism if the smokers of our country and army would rise up to a man and abandon it. Aside from the fact that by so doing they would create an army superior to any upon European soil, they would assist greatly in our plan of conservation. More than one and one-half billion dollars now annually paid for tobacco would be diverted from useless to useful channels. This gigantic sum would be sufficient continuously to supply an army of practically two and one-half million men. And in addition more than one hundred thousand men and women would be released from the tobacco business and made available for constructive enterprises.

Or if the tobacco interests, who are now actively urging us to send tobacco to our soldiers, really wished to perform a patriotic service to our country, they should announce that at least for the period of the war they will discontinue the growth and sale of tobacco, for by so doing they would not only directly increase the efficiency of the army, but they would release for other purposes the one and one-half million acres of land now used for growing tobacco. These great tracts of land would annually produce twenty to twenty-five million bushels of wheat or twice that amount of corn—an equivalent in flour sufficient for an army of fully two million men.

American interests everywhere, from those of the humblest housewife to those of the wealthiest financier,

are being converged into a common cause. Railroad magnates and shop girls are cheerfully "doing their bit". It would be only real loyalty if the American tobacco interests would abandon the growth and sale of a useless substance and convert their fields into waving grain sufficient to feed a gigantic army.

But it is doubtful that such action can be expected. Any interest that will furnish tobacco to a heathen who is struggling to free himself from an enslaving habit, that will annually spend millions to induce young people to acquire a ruinous habit, and that will urge us to send tobacco to our soldiers when science has positively demonstrated its use to be detrimental, interests of this kind, we say, can scarcely be expected to take the lead in matters of reform.

Readers of course will do well to distinguish between the great army of well-meaning laymen, who have unwittingly permitted themselves to be used as mere tools in this gigantic campaign, and the profiting interests behind it. Upon the table before the present writer is a list of donors to a local tobacco fund; women's names are greatly in excess of men's. The immense army of mothers, sisters, sweethearts, fathers, preachers, editors, and many others, who are now assisting in the campaign to supply tobacco to the soldiers, will sooner or later awaken to the fact that they have been trapped into doing our army and our country an irreparable wrong.

XXVI

ATTITUDE OF THE. CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS TOWARD THE USE OF TOBACCO.

The Church of Jesus Christ of Latter-day Saints, frequently called the "Mormon" Church, was organized in the state of New York on the 6th day of April, 1830, practically 88 years ago. From the outset the Church distinguished itself from other religious organizations by a large number of characteristic doctrines, chief among which was that of continuous revelation. The Prophet Joseph Smith, founder and leader of the organization, declared to the world that he had talked face to face with the Father and the Son several years before the Church was organized, and that upon numerous subsequent occasions he received direct revelation from God relative to the welfare of the Church and its members.

The Church from its beginning has maintained an active missionary system, resulting in a gradual, and at times, rapid increase in the number of its adherents. The early membership consisted entirely of new converts principally from other religious organizations, who, naturally enough, retained many of their former practices, especially those not discountenanced by the Church.

It is not at all surprising, moreover, to learn that many of the early members brought with them habits,

such as the use of tobacco and alcoholic beverages, to which they had been accustomed before their conversion. Scarcely three years after the Church was organized, however, the members were given, through direct revelation from God, some very definite instructions concerning these and other habits, and since that time the Church has never ceased to wage a vigorous campaign against them.

The following quotation from the *Doctrine and Covenants* constitutes a revelation given to the Prophet Joseph Smith in 1833 at Kirtland, Ohio, which at that time was the headquarters of the Church:

“A Word of Wisdom, for the benefit of the Council of High Priests, assembled in Kirtland, and the Church; and also the saints in Zion.

“To be sent greeting—not by commandment or constraint, but by revelation and the word of wisdom, showing forth the order and will of God in the temporal salvation of all saints in the last days.

“Given for a principle with promise, adapted to the capacity of the weak and the weakest of all saints, who are or can be called saints.

“Behold, verily, thus saith the Lord unto you, in consequence of evils and designs which do and will exist in the hearts of conspiring men in the last days, I have warned you, and forewarn you, by giving unto you this word of wisdom by revelation,

“That inasmuch as any man drinketh wine or strong drink among you, behold it is not good, neither meet in the sight of your Father, only in assembling

yourselves together to offer up your sacraments before him.

“And, behold, this should be wine, yea, pure wine of the grape of the vine, of your own make.

“And, again, strong drinks are not for the belly, but for the washing of your bodies.

“And again, tobacco is not for the body, neither for the belly, and is not good for man, but is an herb for bruises and all sick cattle, to be used with judgment and skill.

“And again, hot drinks are not for the body or belly.

“And again, verily I say unto you, all wholesome herbs God hath ordained for the constitution, nature, and use of man.

“Every herb in the season thereof, and every fruit in the season thereof; all these to be used with prudence and thanksgiving.

“Yea, flesh also of beast and of the fowls of the air, I, the Lord, have ordained for the use of man with thanksgiving; nevertheless they are to be used sparingly;

“And it is pleasing unto me that they should not be used only in times of winter, or of cold, or famine.

“All grain is ordained for the use of man and of beasts, to be the staff of life, not only for man but for the beasts of the field, and the fowls of heaven, and all wild animals that run or creep on the earth;

“And these hath God made for the use of man only in times of famine and excess of hunger.

“All grain is good for the food of man, as also the

fruit of the vine, that which yieldeth fruit, whether in the ground or above the ground.

“Nevertheless, wheat for man, and corn for the ox, and oats for the horse, and rye for the fowls and for swine, and for all beast of the field, and barley for all useful animals, and for mild drinks, as also other grain.

“And all saints who remember to keep and do these sayings, walking in obedience to the commandments, shall receive health in their navel, and marrow to their bones,

“And shall find wisdom and great treasures of knowledge, even hidden treasures;

“And shall run and not be weary, and shall walk and not faint;

“And I, the Lord, give unto them a promise, that the destroying angel shall pass by them, as the children of Israel, and not slay them. Amen.

For the reader's convenience the writer has taken the liberty of placing in *italics* that part of the revelation that particularly applies to our present discussion.

It may be well to make note of the fact that at this early date the Lord did not offer the Word of Wisdom as a direct “commandment or restraint”. On the other hand, he did offer it as the “will of God”, and said that compliance with it would be “pleasing” unto Him. There has never been any room for any question in the minds of the Latter-day Saints in regard to their duty in this matter. Whatever is the “will of God” and

“pleasing” unto Him constitutes sufficient reason for strict compliance with every detail.

It should also be noted that the Word of Wisdom was given to “all” of the saints, and that it was “adapted to the capacity of the weak and the weakest of all saints who are or can be called saints”. The marvelous promises based upon compliance with the Word of Wisdom and “obedience to the commandments” will receive some attention in later paragraphs.

It should hardly be expected that the tobacco habit, and other habits condemned by the Word of Wisdom, would immediatly be abandoned by all Church members, even though they knew that it is the “will of God”. No one knows the difficulty of laying these habits aside quite so well as those who have acquired them and have tried to give them up. Then again church membership always includes some who are not staunch and fullfledged.

It is to the great credit of the Latter-day Saints, however, that immediatly after receiving the Word of Wisdom, vigorous steps were taken to see that its terms were complied with. Almost as a unit the elders of the Church, who had previously indulged in objectionable practices, abandoned them and at once set out to convince the laity that they should do likewise. The response as a whole must have been gratifying, for vast numbers of the Church membership immediately complied with the call of their leaders.

It is of course natural that here and there individuals failed to give heed to the admonitions of the revelation, and, furthermore, that some who had at first aband-

oned their habits later returned to them. It seems that the leaders adopted a policy of leniency, hoping that time and forbearance would enable everyone to live up to the requirements of the will of God. And in this they were largely successful, for as years passed the percentage of Church members using tea, coffee, alcoholic beverages, tobacco and other objectionable substances gradually decreased. This condition was quickly brought about notwithstanding the fact that large numbers of converts were continuously being added to the Church. At the present time there is unquestionably no other similar body of men and women in the world who are as singularly free from objectionable habits as are the Latter-day Saints.

These results, however, were not attained without careful and continuous work on the part of the Church leaders and an unbending desire on the part of the laity to comply with the full pleasure of God's will. In the early days of the Church, delinquent members were urged to "keep the Word of Wisdom", but there seemed to be very few cases of discipline for non-compliance. It was not long, however, until the Church officials began to feel that the brethren had had plenty of time in which to reform, and especially that teachers among them were unworthy of the callings if they persisted in indulging in objectionable habits. The following statement was made by Patriarch Hyrum Smith, in 1842, almost exactly two years before his martyrdom:

"Tobacco is a nauseous, stinking, abominable thing, and I am surprised that any human being should think

of using it—for an elder especially to eat or smoke it, it is a disgrace to him; he is not fit for the office; he ought first to learn to keep the Word of Wisdom, and then to teach others. God will not prosper the man who uses it.” (*Times and Seasons*, June 1, 1842, Vol. III, page 800.)

During the presidency of Brigham Young the Church leaders kept up a constant campaign in line with the Word of Wisdom. President Young himself taught in very positive terms the absolute necessity of compliance with the will of God in this matter. All of the other leaders down to and including the present head of the Church have felt and taught that members who are not keeping the Word of Wisdom are scarcely in full fellowship.

During the past decade a more and more rigorous attitude has been assumed toward members who persist in using tea, coffee, tobacco and alcoholic beverages. Instructions have been sent out by the First Presidency to the proper officers that no men either young or old shall be ordained to the Priesthood who use these substances. Instructions are also given that in the selection of missionaries no one must be recommended who uses them. Similar instructions have been given with respect to the selection of officers laboring within the Church at home. Admission to the temples, which is granted only to members in full fellowship, is refused to those who do not keep the Word of Wisdom. And, it might be added, these instructions are being very strictly followed.

To the average visitor among the “Mormon” people

one of the most notable features is the almost complete absence of smoking. One could stand at the gates of the great tabernacle grounds in Salt Lake City at the dismissal of a special priesthood meeting, composed of both old and young men, and out of the thousands present could not see a single man who uses tobacco. The unstained whiteness of the old men's beards and the general sweetness of person are features of which these people should be justly proud.

The "Mormon" people are not waiting for Deity to do it all. They believe that God will bring about his purposes through the operation of natural law, and that He expects them to do their part. And so they are striving daily to eliminate deterring factors, hoping that as each difficulty is overcome they will receive light and strength to go forward with the next.

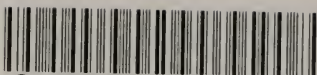
When the whole truth of what these people have already accomplished becomes known, the results will be regarded as nothing short of marvelous. The remarkably low death rate of communities composed predominantly of "Mormons" is not alone due to climatic and sanitary conditions, as is proven by the fact that the death rate among Mormons is much lower than among non-Mormons living in the same communities. Naturally enough, not all of the "Mormon" people have been keeping the Word of Wisdom, and, in consequence, the average death rate of the whole body is above that of those who are faithfully performing their duties. Recent studies among large families who have kept the Word of Wisdom for three or four generations

have yielded almost unbelievable results in the matter of low death rate and general absence of sickness.

Notwithstanding the wonderful success that has already been attained, the Church feels that there is yet much to be done. There still remain some few of the older members who must be induced, if possible, to abandon objectionable habits. Then again the great army of converts must be properly trained, and above all the welfare of the youth of Zion must be safeguarded. To this end the Church is using the strength of its wonderful organization. The Word of Wisdom is everywhere being preached by its elders, and in addition, it is being taught in its various auxiliary organizations, including the Primary, Religion Class, Sunday School, Young Men's and Young Ladies' Mutual Improvement Associations, Relief Society and Church School System, so that practically every member of the "Mormon" Church is constantly in touch with its influence.

The blessings promised as a result of compliance with the Word of Wisdom and "obedience to the commandments" are just beginning to be realized. The Church is looking forward to the time when by right living, which means compliance with the laws of God, and, therefore, with the laws of nature, sickness, disease and distress will be removed. The Latter-day Saints believe that many of the weakness and imperfections of the human body are legacies born of the improper habits of their ancestors—that they are the sins of the fathers being visited upon the children to the third and

fourth generations—and they hope that by proper living, and the blessings of the Lord, sickness will eventually be eliminated and that the length of the human life will be restored to the “age of a tree”.



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